7815 Educ

UNIVERSITY OF ILLINOIS
DEC 31 1962
LIBRARY

lshABSTRACTS

E ONE NUMBER THREE APRIL 1961

ed by DEAFNESS SPEECH AND HEARING PUBLICATIONS

nization founded by the AMERICAN SPEECH AND HEARING ASSOCIATION AND GALLAUDET COLLEGE

Deafness Speech and Hearing Publications, Inc.

BOARD OF DIRECTORS

President
George E. Detmold, Ph.D.
Gallaudet College

Vice President
Stanley H. Ainsworth, Ph.D.
University of Georgia

Secretary and Treasurer
Kenneth O. Johnson, Ph.D.
American Speech and Hearing Association

Members of the Board

Powrie V. Doctor, Ph.D.
Gallaudet College

Wendell Johnson, Ph.D.
University of Iowa

Howard L. Roy, Ph.D.
Gallaudet College

CONSULTANT TO THE BOARD

Mack D. Steer, Ph.D., *Purdue University*

EDITOR

Jerome D. Schein, Ph.D., *Gallaudet College*

GENERAL INFORMATION

Deafness Speech and Hearing Publications was founded by the American Speech and Hearing Association and Gallaudet College. It publishes *DSH Abstracts*.

DSH Abstracts contains abstracts of literature in the areas of deafness, speech, and hearing. It is published quarterly in January, April, July, and October and is printed by the Interstate Printers and Publishers, Inc., at 19-27 North Jackson Street, Danville, Illinois. Second-class postage is paid at Danville, Illinois.

Subscription rates are $8.00 a year in the United States; $8.50 a year outside the United States; $2.10 the single copy. Members of the Alexander Graham Bell Association for the Deaf, Inc., the American Instructors of the Deaf, the American Speech and Hearing Association, and the Conference of Executives of American Schools for the Deaf are eligible for a reduced subscription rate of $5.00 a year. Address changes should reach the subscription office of Deafness Speech and Hearing Publications by the first of the month preceding a change. Subscribers must notify the Post Office they will guarantee forwarding postage for undelivered copies. Other claims for undelivered copies must be made within four months of publication.

Subscription orders and business correspondence should be sent to Kenneth O. Johnson, Treasurer, Deafness Speech and Hearing Publications, American Speech and Hearing Association, 1001 Connecticut Avenue, N.W., Washington 6, D.C.

This publication was made possible by a training grant provided by the Office of Vocational Rehabilitation, Department of Health, Education, and Welfare.

V

C

H

H

SP

SP

GE

AU

DSH ABSTRACTS

Volume 1 APRIL, 1961 *Number 3*

CONTENTS

	Abstracts	Page
HEARING		
Anatomy and Physiology	696 - 707	201
Apparatus and Procedures	708 - 718	204
Auditory Skills	719 - 722	206
Psycho-Acoustics	723 - 733	209
HEARING DISORDERS		
Audiometry	734 - 742	211
Auditory Training	743 - 745	215
Diagnosis and Appraisal	746 - 765	216
Education	766 - 795	221
Etiology and Pathology	796 - 828	229
Hearing Aids	829 - 832	237
Language and Communication	833 - 844	238
Multiple Handicaps	845 - 851	241
Psychological Factors	852 - 863	243
Social and Legal Factors	864 - 868	246
Vocational Training and Adjustment	869 - 875	248
SPEECH		
Acoustics	876 - 885	251
Anatomy and Physiology	886 - 898	253
Auditory Feedback	899 - 903	256
Communication Theory	904 - 908	257
Intelligibility	909 - 914	259
Phonetics	915 - 923	261
Semantics	924 - 927	263
Speech and Language Development	928 - 938	264
Voice	939 - 943	267
SPEECH DISORDERS		
Aphasia	944 - 958	268
Articulation Disorders	959 - 962	272
Cerebral Palsy	963 - 967	273
Cleft Palate	968 - 995	275
Delayed Speech	996 - 998	281
Diagnosis and Appraisal	999 - 1005	281
Laryngectomy	1006 - 1010	283
Stuttering	1011 - 1015	284
Voice Disorders	1016 - 1019	285
GENERAL	1020 - 1040	286
AUTHOR INDEX		291

DSH ABSTRACTS

EDITOR

Jerome D. Schein, *Gallaudet College*

ASSISTANT EDITORS

Stanley H. Ainsworth, *University of Georgia*
Richard G. Brill, *California School for the Deaf, Riverside*
Phillip A. Yantis, *Western Reserve University*

CONTRIBUTING EDITORS

Franklin H. Knower, *Ohio State University*
Parley W. Newman, *American Speech and Hearing Association*

EDITORIAL ASSISTANT

Isabel C. Lee, *Gallaudet College*

ABSTRACTERS

R. W. Albright, *Arizona State U.*
V. Baird, *Junior League School for Speech Correction, Atlanta, Ga.*
A. J. Berlin, *Pennsylvania State U.*
R. C. Bilger, *U. Pittsburgh*
W. Blea, *Calif. School for the Deaf, Riverside*
N. J. Christensen, *West Virginia U.*
L. E. Connor, *Lexington School for the Deaf, New York, N. Y.*
D. R. Frisina, *Gallaudet College*
E. Froeschels, *New York, N. Y.*
M. D. Garretson, *Montana School for the Deaf and the Blind*
S. I. Gilmore, *Junior League Speech and Hearing Clinic, Columbia, S. C.*
C. P. Goetzinger, *U. Kansas Med. Center*
R. Goldstein, *The Jewish Hospital of St. Louis, St. Louis, Mo.*
M. M. Halfond, *Temple U.*
D. A. Harris, *V. A. Hospital, Dallas, Texas*
J. Jeffers, *Los Angeles State College*
A. K. Kaires, Capt., *DC, USN, Dental Clinic Naval Base, Brooklyn*
M. S. Kent, *Maryland School for the Deaf*
B. A. Landes, *Texas Technological College*
I. Lehiste, *U. Michigan*
C. Lightfoot, *U. Illinois, College of Medicine, Chicago*
H. L. Luper, *U. Georgia*
D. M. Markle, *N.Y.U.-Bellevue Medical Center*
R. L. McCroskey, *Emory U., Atlanta, Ga.*
M. Mecham, *Brigham Young U.*
J. Melrose, *Veterans Administration, Belmont, Mass.*
J. B. Miller, *U. Kansas Med. Center*
M. H. Miller, *Kings County Hospital Center, Brooklyn*
B. V. Morkovin, *U. Southern California*
M. Nelson, *Michigan State U.*
E. H. Nober, *Adelphi College*
D. A. Olson, *Medical College of Alabama*
E. Owens, *U. California Med. Center*
C. D. Parker, *Montana State U.*
J. B. Ranney, *Auburn U., Auburn, Ala.*
M. Rees, *Sacramento State College*
F. B. Robinson, *Miami U., Oxford, Ohio*
P. E. Rosenberg, *Temple U. School of Medicine*
H. B. Ruhn, *U. of Oklahoma Med. Center*
E. D. Schubert, *Indiana U., Bloomington, Ind.*
H. F. Schunhoff, *California School for the Deaf, Berkeley*
J. C. Shanks, *Indiana U. Med. Center, Indianapolis*
J. L. Shapley, *Veterans Administration, Seattle, Washington*
J. G. Sheehan, *U. California, Los Angeles*
B. S. Street, *Minneapolis, Minn.*
M. Vernon, *California School for the Deaf, Riverside*
J. C. Webster, *USN Electronics Laboratory, San Diego, California*
M. S. Werner, *Orthopedic Hospital, Asheville, N. C.*
H. G. Williams, *Mary Hare Grammar School, Berkshire, Great Britain*
N. Wood, *Off. Ed., HEW, Washington, D.C.*
E. Y. Zedler, *Southwest Texas State College*

DSH ABSTRACTS

HEARING

Anatomy and Physiology

696. CATALANO, G. B., and MADONIA, T., Azione della proclorpemazina sulla soglia audiometrica soggettiva e su quella obiettiva rilevata con il riflesso psicovoltaico Manfredi. (Effects of prochlorpromazine on measurements of the auditory threshold.) *Clin. Otorinolaringoiat.*, 12, 1960, 51-57.

An investigation was conducted to find the central mechanism regulating the auditory threshold. Prochlorpromazine was given 17 adults. Pure tone audiograms taken before and after drug ingestion were not significantly different, but thresholds measured by PGR increased slightly in half of the subjects. It is well known that the mesencephalic reticular substance is influenced by this drug. The results obtained could, perhaps, confirm the theory that the reticular formation is the site of the central regulation of the threshold. *(I.C.L.)*

697. DAMBORSKÁ, M., FILOVÁ, V., and ŠTĚPÁNOVÁ, P., Rozvoj sluchu u ústavních dětí. (The development of hearing in institutionalized infants.) *Cesk. Pediat.*, 14, 1959, 911-913.

In a children's home the development of hearing was followed in a group of 180 children up to three months of age with a view to determining stages: (a) stage of the surprise reaction (up to four weeks); (b) stage of the auditory dominants (four to eight weeks); (c) stage of the auditory differentiation with a beginning of recognition of accent; (d) stage of beginning coordination of eyes, neck muscles and hearing (two to three months). Attention is called to large individual differences in auditory reaction in completely normal children, and the dependence on position (on its back or sitting). *(Authors' summary)*

698. FLANAGAN, J. L., Models for approximating basilar membrane displacement. *Bell Syst. tech. J.*, 39, 1960, 1163-1191.

Three analytical models are developed for estimating the displacement of the basilar membrane in the human ear when the sound pressure at the eardrum is known. Frequency-domain data, derived experimentally by Békésy, are Fourier-transformed to examine the impulse response of the membrane. Time-domain and frequency-domain responses of the models are compared with the experimental data. Excitation of the models by periodic impulses is considered. Calculations of membrane displacement are made for excitation by positive pulses, and by alternately positive and negative pulses. Applicability of the results to the perception of pitch is indicated. *(Author's summary)*

699. GERSHUNI, G. V., Regulatsia kharakteristiki slukhovoi sistemy. (Regulation of the characteristics of the auditory organ.) *Vest. Oto-Rino-Laringol.*, 22, 1960, 119-120.

The data reported by the author demonstrate the influences of the central nervous system on the state of the peripheral parts of the "auditory analyzer" (auditory organ). An accurate investigation of this influence was made possible by the physiological study of attributes of parts of the auditory organ, peripheral and central, when their relationships to the whole organism are intact. *(B.V.M.)*

700. MAGGIO, E., Nuovo metodo di studio della micro-emocircolazione utilizzante la mucosa dell'orecchio medio di cavia. (New method for the study of microhemocirculation using Guinea Pig middle ear mucosa.) *Ann. Laringol. Otol. Rinol. Faringol.*, 34, 1960, 273-277.

The author set up an experimental method for "in vivo" studies on micro-hemocirculation in Guinea-Pig middle ear mucosa, which also permitted a good photographic documentation of phenomena observed. Details and advantages of the method are discussed and some pictures of living and histological preparations of ear mucosa are reported. *(Author's summary)*

701. ORMEROD, F. C., The physiology of the endolymph. *J. Laryngol. Otol.*, 74 1960, 659-667.

Reference is made to previously reported "preparations of the ampulla of the semicircular canal of some pigeons into whom radioactive sulphur had been injected. This labelled sulphur replaced that in the sulphomucopolysaccharides which are found in the endolymph." Continued investigations by the same technique are reported. "In the four parts of the internal ear now studied there is a comparable sequence of events—appearance of labelled sulphur in the secretory epithelium, its passage across the endolymph to the cupula, tectorial membrane or otolith membrane, impregnation of these structures for a longer period, and no impregnation of the sensory epithelium." The author concludes, on the basis of his own work and that of others, which is briefly reviewed, that the "endolymph . . . is a continuously flowing medium which amongst other substances provides mucopolysaccharides and probably protein for the proper function of the sense organ. The tectorial and other membranes appear, from the autoradiographs shown, to be the seat of the most important functions and it is probable that the transduction of mechanical energy into changes of electric potential takes place in these structures and actually where the hairs of the sensory cells fit into the tubules in the meshwork of the membrane." Ten radiographic plates. *(C.L.)*

702. PIZARRO, F. R., La diferencia de fase en la transmisión sonora del oído medio. (The difference in phase of sound transmission through the middle ear.) *Acta otorrinolaringol. Espan.*, 3, 1960, 63-67.

The author measures the mean pathways via air and via the ossicular chain to the round and oval windows, and calculates the velocities of the sound waves through these. His calculations demonstrate that the impulses arrive at the two windows in phase throughout the range of hearing. *(M.S.W.)*

703. PIZARRO, F. R., La amplitud de movimiento en la membrana de la ventana redonda. (The amplitude of movement in the membrane of the round window.) *Acta otorrinolaringol. Espan.*, 3, 1960, 75-77.

The author calculates that the amplitude ratios of the excursions of the tympanum, stapedial footplate and the membrane of the round window are 1.3:1:1.3 with a cochlear fluid displacement of 0.225mm³ for each mm of footplate movement. These calculations were made for the frequency of 1000 cps. They suggest that amplitude of displacement of tympanum and round window are the same for the speech frequencies. *(M.S.W.)*

704. PYE, J. D., A theory of echolocation by bats. *J. Laryngol. Otol.*, 74, 1960, 718-728.

Data substantiating high precision in the echolocation by bats are reviewed. "The theories which have been advanced to explain how bats obtain this accurate information appear to be inadequate especially for short range operation. . . . In the case of the bat it appears that distortion introduced by nonlinearity might be of great value. A nonlinear device supplied with energy of two frequencies constructs a range of overtones, summation tones and difference tones in addition to the two fundamentals. A bat's pulse and its echo could be treated in this way if heard simultaneously, that is if an object is close enough for overlap to occur at the ear. Since the call and echo will seldom be separated by more than one octave, the first order difference tone will nearly always be of lower frequency and will be audible as a beat note. Due to the nature of the pulse produced, this beat note has some interesting properties which may provide sufficient information to satisfy the bat's navigational properties." Bat pulses appear to be of two types represented by two families, the Vespertilionidae and the Rhinolophidae. Application of the "beat note theory" for these two families is considered in some detail. The possible source of nonlinearity is discussed. *(C.L.)*

705. SIMMONS, F. B., Post-tetanic potentiation in the middle-ear-muscle acoustic reflex. *J. acoust. Soc. Amer.*, 32, 1960, 1589-1591.

Temporary improvement in the threshold of the middle-ear-muscle reflex in response to sound occurs following short exposures to moderately loud sound (80-90 db). Pre- and postexposure reflex thresholds for several frequencies were obtained from awake cats with permanently implanted electrodes in the tensor tympani and stapedius muscles, and on the round window.

The increased threshold sensitivity observed (up to 40 db) is considered to be classifiable as a phenomenon of post-tetanic potentiation, and as a demonstration of hyperexcitability in certain brain-stem auditory structures following sound stimulation. *(Author's summary)*

706. SIMMONS, F. B., GALAMBOS, R., and ALBRITE, J. P., Serial studies of the onset and progression of drug-induced cochlear damage in cats. *A.M.A. Arch. Otolaryngol.*, 1960, 72, 233-239.

There has been a need for precise information with respect to the development of cochlear as compared to vestibular damage in animals placed on a drug schedule expected to induce such damage. Previous information has come largely from post-mortem histologic studies. The most feasible method of obtaining such information appears to be through the measurement of cochlear microphonics before, during and after drug dosage. Electrodes were placed on the round windows of a large number of cats. If, at the end of one or two weeks, the cochlear microphonic amplitudes approximated those seen at the time of operation, base-line recordings were taken and the cat was placed on the drug program. A few cats with normal responses were used as controls and not placed on drug therapy although each cat also acted as his own control. Cochlear microphonic measurements made during the course of the schedule were compared with predrug measurements on each cat. The sound source, generated by a General Radio 1304 B oscillator, was fed through an Audiovox 9-C Receiver affixed to the cat's ear mold. Cochlear microphonics in microvolts were recorded by continuous plotting in response to the changing frequency of the tone. Pure tones between 0.2 and 20 kc at intensities of 35, 55, and 75 db re normal were presented in a systematic manner from low to high frequencies and vice versa. Each cat received daily or twice-daily subcutaneous injections of streptomycin sulfate, dihydrostreptomycin sulfate or neomycin-sulfate. The dose range used approximated 3 to 50 times the clinical value for man. Drugs were given on a milligrams-per-kilogram basis. The drug schedule was terminated either at 60 days or when the cat became deaf. The following conclusions can be reached: (a) relatively large doses of streptomycin are required to produce microphonic losses in less than 60 days (200-400 mg/kg/12 hrs.). With only two exceptions the onset of the loss preceded death by a short interval. The loss is at first generalized to the entire frequency range and most noticeable with high intensity input. Later the response to lower intensities is affected and there is greater loss in the higher frequencies. (b) Dihydrostreptomycin was found in general not to produce microphonic losses. Only the cat placed on the largest dosage (600 mg/kg/12 hrs.) showed any loss and not until after 23 days of injection. (c) Neomycin proved to be markedly ototoxic and to exceed by a wide margin the ototoxicity of streptomycin or dihydrostreptomycin. Only two of the five cats survived the dosage (100 mg/kg/24 hrs.) long enough to develop complete loss of microphonics. One cat was normal on the 7th day but completely deaf by the 9th day. (d) Signs of vestibular toxicity developed in all cats surviving their drug schedules for at least one week except for those given neomycin and the smaller doses of dihydrostreptomycin. (e) All cats on both streptomycin and dihydrostreptomycin (except one) developed signs of vestibular damage before any microphonic change appeared. Ten of the 16 developed vestibular signs only. The generally accepted clinical impression on man that dihydrostreptomycin is associated primarily with auditory malfunction is not supported by these studies. (f) The more generalized systemic toxic reactions included vomiting, anorexia, weight loss, loss of fur sheen and minor skin lesions. Neomycin was by far the most toxic while streptomycin was at least twice as toxic as dihydrostreptomycin. *(J.J.)*

707. TANAKA, Y., OGINO, F., and ISHIKAWA, A., Two cases of disturbance of pigmentation with hearing loss. *Otol. Fukuoka*, 6, 1960, 92-96.

The authors reported here two cases of disturbance of pigmentation with hearing loss. Dermatologically one was diagnosed as xeroderma pigmentosum and the other as leucopathia congenita. They observed total deafness in the former, and severe loss of hearing in the right ear and delay in the recovery after the load of loud

tones in the latter. Each case was examined enzymologically and the relation between metabolism of pigment and mechanism of hearing was investigated from process of the formation of melanin. *(Authors' summary)*

APPARATUS AND PROCEDURES

708. ANON., Loop systems and licences. *Teach. Deaf.*, 58, 1960, 244-245.

An explanation of the electronics involved in the loop system as employed in amplifiers in a school for the deaf is presented. Loop amplifiers are essentially radio transmitters of restricted range. As part of the system of radio transmission including hospital personnel calling systems, normal low frequency broadcasting, television and very high frequency broadcasting to ultra high frequency microwave radiation, the loop amplifier system must be licenced. The licencing administered by the Postmaster General under the Wireless Telegraphy Act of 1949 protects the loop operators from interference from external sources. *(M.S.K.)*

709. ANON., Study and investigation of specialized electro-acoustic transducers for voice communication in aircraft. *Western Electro-Acoustic Laboratory*, Final Report on Phase II of Contract AF33(616)-3710, Jan., 1960.

New techniques for projecting and receiving voice communications promising less weight and bulk and staying within limits of noise tolerances are studied. The limits of expected noise in future aircraft and space craft are studied and predicted. Use of bone conduction for reception is discarded. Forehead, tooth, and conventional microphones, horn-coupled and direct-coupled miniature receivers, and direct radiating loudspeakers were assembled into systems and evaluated as to the limits of their utility in noise and their long-term comfort tolerance. Noise cancelling microphones in noise shields and dynamic receivers under a good muff, or used with a V-51R earplug and helmet, provide speech communication possibilities in the highest levels of noise. *(J.C.W.)*

710. CREELMAN, C. D., Detection of complex signals as a function of signal bandwidth and duration. *J. acoust. Soc. Amer.*, 33, 1961, 89-94.

A study is reported which examined the efficiency of human observers in the detection of a stimulus waveform which is a train of damped sinusoids. The signal duration and degree of damping (or spectral bandwidth) were varied, with the energy of the signal held constant. Increased bandwidth is shown to decrease detection of relatively long duration signals. A negligible effect of bandwidth was found for short durations. Detection of an amplitude difference, in contrast to detection of the presence of weak signal in noise, is shown to be relatively unaffected either by signal duration or bandwidth over the range of values studied. *(Author's summary)*

711. GIORGIO, B., Rilievo comparato del riflesso psicovoltaico in varie zone del corpo umano. (Comparisons of the psychovoltaic reflexes in different parts of the human body.) *L'Oto-Rino-Laringol. Ital.*, 29, 1960, 471-483.

Brief descriptions of the psychogalvanic and of the Manfredi psychovoltaic reflexes are given, showing the advantages of this latter method, which has made a rapid comparative survey of the various zones of the human body possible, by means of specially constructed electrodes. It has been found that the degree of the reflex depends both on the number of glandular sweat elements present and on the more or less rich innervation of these. Average curves obtained through electric stimulation are presented, together with examples of the typical behavior of single subjects. *(Author's summary)*

712. KRYTER, K. D., Study of a speech compression system (spectrum selection). Bolt, Beranek, and Newman, TR4 on Contract DA-36-039 SC-78078, Sept. 1960.

PB word tests were conducted with (a) various configurations of three band pass filters, each 500 cps wide, and (b) various configurations of six band pass filters each 100 cps wide. The positions of the center frequencies of the band pass filters were systematically varied during the tests. If we use constant speech intelligibility as our criterion, preliminary results indicate that the total "effective" bandwidth required for the best multiple pass band system

using six 100 cps filters is less than that required for the best three 500 cps pass band systems by a factor of about 2. *(Author's summary)*

713. **REINECKEN, R., Ergebnisse der Drehpendelprüfung bei Vestibulariserkrankten.** (Results of the "twisting-pendulum test" in vestibular disease.) *Z. Laryngol. Rhinol. Otol.*, 39, 1960, 820-827.

Abrupt oscillating movements of the rotatory chair ("Drehpendelprüfung"–DPP) are used to test the function of the vestibular apparatus by means of a minimal rotatory stimulus. This is in contradistinction to the usual rotatory examinations after Barany. The oscillation tests employ a physiological stimulus which consists of turning movements, such as commonly occur in everyday life. The method of examination by means of DPP and the results obtained in healthy subjects are briefly described. Next, patients with pathological disturbances of equilibrium were tested with DPP in order to determine the clinical and diagnostic value of this examination in diseases affecting the vestibular apparatus. Altogether, 80 patients were selected in whom tests of the labyrinthine function were expected to give pathological results. Electronystagmography was employed during rotatory tests, DPP, and vestibular caloric tests. In those cases where a spontaneous paroxysmal or positional nystagmus may have been present, this too was duly recorded by the electronystagmograph. Romberg's and Barany's tests were carried out, walking and blindfolded. Most important in the assessment of the value of DPP was its comparison with the rotatory test. In diseased states three subdivisions were made according to the presence or absence of pathological results on rotatory and abrupt oscillating tests. It was not possible to determine with certainty the localization of the disturbances in the vestibular system in the respective groups. It was striking that the group with a negative postrotatory time difference combined with the presence of pathological findings in DPP consisted entirely of cases with a long history of vertigo often extending over several years. The distribution of recent and long-standing cases of vertigo was roughly equal in the other two groups. The results of the investigations show that DPP helps to discover abnormalities of the vestibular system which would otherwise escape detection when only the usual rotatory tests are used. Directional preponderance results in nystagmus for about 20 seconds after the rotatory chair has been stopped. The relationship of this phenomenon to the postrotatory after-nystagmus following the rotatory test is discussed. It is pointed out that DPP might be used to determine fitness for certain occupations. Pathological findings indicate that the patient would be unsuitable to undertake jobs demanding the essential use of the organs of equilibrium and should undergo vocational training. Patients giving abnormal results in the rotatory test but normal reactions to DPP appear to have much milder vestibular disturbances. Furthermore, nausea and vomiting are much more rarely produced by DPP than by the routine rotatory tests. *(J.D.S.)*

714: **SEDLÁČEK, K., and PETŘÍK, M., Nová metodika vyšetřování základních faktorů směrového slyšení v klinické praxi.** (A new method for examination of principal factors of directional hearing in the clinical praxis.) *Cesko. Otolaringol.*, 9, 1960, 324-332.

A method is reported of examination of the time and intensity factors of directional hearing and an apparatus is described, developed for their examination. The apparatus is a generator of impulses with the frequency of 50Hz which may be applied through ear-pieces either simultaneously or successively with a relative time-shifting up to 2ms. Differences of intensity are given in decibels. Results of the examination are registered into a diagram which enables reading of the threshold of the time difference as well as the threshold of the difference of intensity and the curve of mutual compensation of both factors. This curve is different in various lesions. Examination will be, probably, important for diagnosis of central disturbances of hearing but also of disturbances of transmission. *(Authors' summary)*

715. **TERKILDSEN, K., and NIELSEN, S. S., An electroacoustic impedance measuring bridge for clinical use.** *A.M.A. Arch. Otolaryngol.*, 72, 1960, 339-346.

Metz, in 1946, devised a mechanical acoustic measuring bridge in order to

compare the acoustic impedance of the ear drum in normal and pathological ears and to investigate the intra-aural muscle reflexes which create changes in the individual ear's impedance. The Metz impedance test for recruitment has been found to be of value in distinguishing cochlear from retrocochlear lesions, in determining whether neural damage in facial paralysis is peripheral or central, in the diagnosis of otosclerosis, and in evaluating psychogenic hearing losses. The aim of the authors was to construct an electroacoustic measuring bridge which would provide an exact electronic counterpart and yet improve upon Metz's mechanical bridge since the latter is extremely difficult to manufacture because of the high degree of precision necessary to avoid small leaks in the system which negate the acoustic balancing principle. Details of the apparatus are described. Since variations in the size of the ear canal create an unavoidable error in measurement, 33 ears were carefully measured for volume of ear canal space. The mean volume was found to be 3.5 ml with variations between right and left ears of 16 patients averaging 0.05 ml. In order to calibrate the bridge for different size cavities a series of carved plastic cavities ranging in size from 0.4 to 16 ml were constructed and data obtained for each. Comparison of the Metz mechanical bridge with the electroacoustic bridge involved a study of the results obtained with 28 ears, including normals and those with otosclerosis, inflammatory diseases, and tubal occlusion. The results indicate that the mechanical bridge yields consistently lower values. In spite of this, the values for both methods show the same tendency leading the authors to state that they feel that the measurements in either method are dealing with the same acoustic characteristics. Although they admit that the absolute impedance figures obtained with the electroacoustic bridge are of little diagnostic value, they are convinced that many diagnostic possibilities may be found in further study of the intra-aural muscle reflexes. *(J.J.)*

716. UEMURA, T., TAWARA, M., MATSUO, K., and INAMI, T., Photoelectronystagmography. *Otol. Fukuoka*, 6, 1960, 210-216.

Among the methods of recording nystagmus which have been in clinical use of late, photoelectronystagmography has a merit of being simpler in its equipment than electronystagmography. In order to improve this merit we tried to make equipment using the photo-transistor smaller and more effective than the photo cell hitherto used. Though very simple this equipment has made it possible to describe a very fine movement of the eyeball. On the other hand, it was discovered that at nystagmus greater than a degree the linear relationship between the deviation of the eyeball and and the pen excursion was lost. Taking this into consideration we are thinking of improving photoelectronystagmography. *(Authors' summary)*

717. WEISS, E., An air damped artificial mastoid. *J. acoust. Soc. Amer.*, 32, 1960, 1582-1588.

An air damped artificial mastoid has been constructed to stimulate the mechanical impedance of the human mastoid. Viscoelastic substances extensively used in current mastoid designs are not employed. The instrument is virtually immune to aging effects and can easily be reproduced. The instrument is used as a laboratory standard to determine the force transmitted through the skull by bone vibrators used in clinical audiometers and bone conduction type hearing aids. *(Author's summary)*

718. WOODHEAD, M. M., Value of ear defenders for mental work during intermittent noise. *J. acoust. Soc. Amer.*, 32, 1960, 682-684.

Ear defenders were worn for protection against the distracting effects of bursts of loud, but not unacceptable, noise during a mental task. Two types of noise were used: one characterized by high and the other by low frequencies. Performance was better with defenders than without them. The improvement was particularly marked with the high-frequency burst. *(Author's summary)*

Auditory Skills

719. CULBERT, S. S., and POSNER, M. I., Human habituation to an acoustical energy distribution spectrum. *J. appl. Psychol.*, 44, 1960, 263-266.

It is hypothesized that unfamiliar stimuli are generally more startling than familiar stimuli of comparable magnitude and that repeated exposure may lead to a marked reduction in the disturbing quality of the unfamiliar stimuli. Common observation indicates that frequently encountered patterns of noise are better tolerated and less distracting than unfamiliar ones. The procedure for testing this hypothesis, with respect to aircraft noise, involved tape recordings of fly-overs by two airplanes (one jet-driven and the other propeller-driven). The play-back system was arranged so that the experimenter could use the sound of either aircraft as a standard, varying the sound pressure level of the other by means of a decade attenuator. The over-all sound pressure level was adjusted to 99 db for the jet airplane and 107 db for the propeller-driven airplane, in accordance with the actual levels of the original recordings. The subjects were undergraduate students who were not informed of the purpose of the experiment, but were motivated by receiving pay for each session attended with a bonus for completing both trials at each of three testing sessions. The data indicated a significant decrease in annoyance for both experimental groups, with the group using the jet noise as standard being responsible for most of the change. There was no significant difference between the groups. Twenty new subjects were tested during the last week of the experimental period and served as controls for the experimental group. Their scores were significantly different from the habituated group scores. A second experiment was conducted involving an experimental group and two control groups. Subjects in all groups were treated identically as described in the first experiment except for the activity during the interval between the two trials of each session. The experimental group was subjected to fly-overs of the jet airplane while members of the other two groups were subjected respectively to silence and to the sound of a loud bell at periodic intervals. The data indicated that all groups showed significantly decreased penalties from first trial to last, confirming the findings in the first experiment. All of the differences between the group exposed to fly-overs and the other two groups are in the direction that would be expected from the hypothesis of decrease in annoyance as the result of habituation. The fly-over group showed the greatest drop from the first trial to second trial, from first week to second week, and from first trial to last trial. It is suggested that there is the possibility that habituation occurs rather rapidly, and that the number of fly-overs during the first session is enough in each of the control groups to bring the penalty down to a level below which the additional fly-overs in the experimental groups would not have an easily measurable effect. *(R.L.M.)*

720. GANDHI, O. P., PETERSON, G. E., and YU, F., Recurrently impulsed resonators in speech and psychophysical studies. *Lang. Speech*, 3, 1960, 140-154.

The authors discuss the relevance of psycho-acoustical studies of the response of the human to nonspeech stimuli, such as pure tones, clicks, and random noise, for understanding speech perception. In the opinion of the authors, the human observer interprets meaningful sounds in terms of the various properties of the source, rather than according to the acoustical dimensions and magnitudes of the sounds or according to psychophysical abstractions such as auditory scales. Although the sources involved in generating the various speech sounds have the properties of pure tone complexes, clicks, and random noise, these sounds are normally modified in speech production by the various resonating chambers of the vocal cavities. There is very little psychophysical information available on responses to elementary sounds of the type generated in speech. The paper describes a study undertaken to apply the techniques of signal detection and recognition research to the perception of elementary vowel vormant patterns. The initial experiment involved a single resonator which was excited by a recurrent impulse. The authors review the voltage response of a series of N decoupled low-pass resonator sections to the sudden application of various types of input pulse trains. The output of such a series of resonators to a recurrent impulse which is suddenly applied contains a d.c. term, a series of transient terms at the uncoupled resonator frequencies, and a steady-state term involving the harmonies

of the input pulse train. A circuit for psychophysical tests is described which provides a number of discrete positions of resonator frequency and damping. Sound spectrographic analyses demonstrating the transient and steady-state terms for a single resonator are presented. *(I.L.)*

721. MUDD, S. A., and McCORMICK, E. J., The use of auditory cues in a visual search task. *J. appl. Psychol.*, 44, 1960, 184-188.

The study is an investigation of the use of auditory cues to reduce operator visual search time in the interactions of a man-machine system. These experimental questions are posed: (a) Can auditory signals of dichotomous dimensions significantly reduce the search time in a dial reading task? (b) Can such auditory cues overcome "newspaper" search patterns? Fifty college students, randomly assigned to one of five conditions, were presented with a 32-dial display and required to locate one dial which was not in "normal" position. Any reduction in visual search time, in comparison with a control condition, was considered as being an operational measure of increased visual search efficiency resulting from the effects of auditory cueing dimensions. The 32-dial panel was divided into eight sectors of four dials each, with the pattern of any one sector on the left side being the mirror-image of the corresponding sector on the right side. Three cueing dimensions were utilized: (a) Dichotomous tone presentation through a binaural headset gave *direction* cues with respect to left or right portions of the panel. (b) Frequency of the auditory signal gave directional cues with respect to upper and lower halves of the instrument panel, i.e., a 1000 cps tone was considered high and a 500 cps tone was considered low. (c) Tone *duration*, composed of a .2 sec. tone and a .5 sec. tone, cued the operator in the direction of inner or outer sectors. Practice trials for each operator included one presentation of each of the cueing systems for each of the eight sectors. Mid values with respect to frequency and duration of tone were included to allow for signal presentations across five conditions of auditory cueing. There was a total of 64 trials, two for each dial on the panel, presented to all Ss in a standard randomized program. Response times to the nearest .01 sec. were recorded. Error responses were electronically prohibited. The results indicate that auditory cueing can reduce significantly the visual search time. The most effective cue is the two-dimensional laterality/frequency cue. It is concluded that auditory cues can be used by an operator to (a) reduce the time required to locate and respond to a deviant dial on a simulated instrument panel and (b) break up habitual search patterns so that no one panel sector or group of sectors is consistently searched first. *(R.L.M.)*

722. PICKETT, J. M., and RUBENSTEIN, H., Perception of consonant voicing in noise. *Lang. Speech*, 3, 1960, 155-163.

The paper reports the results of a study of the perception of consonant voicing in two kinds of noise, white random noise and low-frequency random noise. The tested consonants, /p b t d f v s z/, were spoken by two male speakers; the listening crew consisted of four college students. The consonants were pronounced in combination with the vowel /I/ in initial, intervocalic, and final position. The randomized utterances were presented to listeners under various combinations of S/N ratio, noise spectrum, and consonant position in utterance. The listener's task was to report whether the consonant spoken was of the class /b d v z/ (voiced) or of the class /p t f s/ (unvoiced). The perception of voicing appeared relatively independent of position in utterance and of the degree of occlusion (stops vs. fricatives). The noise spectrum appeared to have a very considerable effect. The dispersion of voicing perception as a function of the place of occlusion was very large in low-frequency noise relative to that in white noise. In low-frequency noise, the absence of voicing in the alveolars /t/ and /s/, was perceived much better than in the labials, /p/ and /f/. The voicing perception for the voiced consonants was independent of place of articulation in both noise spectra. The authors suggest that voicing cues, contained in the low frequencies, are essentially independent of place of articulation. High-frequency cues vary with place of articulation; low-frequency noise thus affects the consonants with differing place of articulation in differ-

ent ways. The greater recognizability of the presence or absence of voicing in the alveolars is considered to be due to the larger amounts of high frequency energy associated with the alveolar consonants. *(I.L.)*

PSYCHO-ACOUSTICS

723. BURRIS-MEYER, H., and MALLORY, V., Psycho-acoustics, applied and misapplied. *J. acoust. Soc. Amer.*, 32, 1960, 1568-1574.

The authors present a concise, often amusing review of psychoacoustic research during World War II and afterwards, with an emphasis on the various attempts to apply new information and information not yet obtained. Empty bottles were thrown from aircraft to discover the effect of the noise, if any. Noise induced fatigue was studied: "If you want to induce fatigue, we suggest you use a treadmill. It is cheaper and you get just as tired." The application of music in industry and hospitals is discussed: "There are even courses in music therapy offered by otherwise reputable educational institutions. This is comparable to teaching aviators to fly before the invention of the aircraft." *(B.A.L.)*

724. CHUN, R., PAWSAT, R., and FORSTER, F., Sound localization in infancy. *J. nerv. ment. Dis.*, 130, 1960, 472-476.

Twenty-six normal infants ranging in age from two to 49 weeks were used. There were 12 females and 14 males. All infants were awake when tested. The sound stimulus was a series of five buzzers placed at prescribed locations. Each buzzer was out of the infant's visual range and was activated for five seconds. Three reflex responses were noted. The *auropalpebral (APR)* or eyeblink response was defined as a closing of the eyelids if the eyes were open and tightening of the lids if the eyes were closed. The acoustic muscle or *startle reflex (AMR)* was defined as a sudden generalized flexing movement of the body or part of the body. The auditory *oculogyric reflex (AOR)* was defined as a movement of the eyes to a sudden sound. Each reaction was rated on a four-point scale to each of the three reflex responses. All the infants responded with at least one of the reflex reactions. Twenty-five responded with two or more reflexes and 21 responded with two reflex responses. All of the infants above 26 weeks showed a definite ability to localize in at least one of the positions tested. Further details are included for each reflex and the infant's age. *(E.H.N.)*

725. DENES, P., and MATHEWS, M. V., Spoken digit recognition using time-frequency pattern matching. *J. acoust. Soc. Amer.*, 32, 1960, 1450-1455.

A study of the machine recognition of the spoken digits zero through nine has been carried out by a digital computer simulation. The spoken utterances were converted to time-frequency patterns of spectral energy. Recognition was done by cross correlating each digit and selecting the digit having the highest correlation. Time normalization could be applied to all patterns, thus reducing utterances to a standard duration. Six male and one female speaker provided 38 samples of each of the 10 digits. Pauses were made between successive words for segmentation. No errors were observed recognizing a single speaker using test patterns from his own speech with time normalization. A group of five male speakers and test patterns averaged over the group produced 6% errors with time normalization and 12% without. A 25% rate occurred for the woman matched against male patterns. The study indicates both the effectiveness and limitations of this simple recognition procedure for limited vocabulary and limited number of speakers. Time normalization improves performance in all cases. *(Authors' summary)*

726. FLANAGAN, J. L., and GUTTMAN, N., On the pitch of periodic pulses. *J. acoust. Soc. Amer.*, 32, 1960, 1308-1319.

Subjects adjusted the frequency of one periodic pulse train to match the pitch of another train fixed in frequency. Two modes of pitch perception are found. In the first mode, for pulse rates less than 100 cps, the pulse trains are ascribed a pitch equal to the number of pulses per second, regardless of the polarity pattern of the pulses. In the second mode, for fundamental frequencies in excess of 200 cps, the sounds are assigned a pitch equal to the fundamental frequency. Between these frequency regions a mode transition

occurs in which the pitch judgments generally fall between the pulse-rate and fundamental-frequency values. Amplitude and phase spectra are computed for the stimuli. The stimuli are studied on an electrical analog of the basilar membrane. Waveforms of membrane displacement and first spatial derivative of displacement are obtained from the analog. An effort is made to correlate the psychophysical results with the displacement and derivative patterns observed on the analog membrane. The two pitch modes are found to be manifested in the mechanical operation of the cochlea. *(Authors' summary)*

727. FLANAGAN, J. L., and GUTTMAN, N., Pitch of periodic pulses without fundamental component. *J. acoust. Soc. Amer.*, 32, 1960, 1319-1328.

The pitch of a periodic pulse train is matched to that of another train whose fundamental component of frequency is rejected. Three modes of pitch perception are found. The first obtains for pulse rates less than 100 cps. Here, in a manner similar to that found previously for unfiltered stimuli, the pitches are matched to equate pulse rate, regardless of the polarity patterns of the trains. The second mode occurs for fundamental frequencies in the approximate range 200-500 cps. Here there is a decided tendency to equate fundamental frequencies. The third mode is manifested for fundamental frequencies of the order of 1000 cps and higher. In this range subjects tend to equate the fundamental of the matching tone to the lowest spectral component present in the matched stimulus. Between the modes, transition regions exist in which the pitch assignment generally is difficult and uncertain. The stimuli are studied with an electrical analog of the basilar membrane. Waveforms of membrane displacement and first spatial derivative of displacement are obtained from the analog. The three (psychophysical) pitch modes are found to be manifested in these mechanical functions of the basilar membrane. *(Authors' summary)*

728. GREEN, D. M., Psychoacoustics and detection theory. *J. acoust. Soc. Amer.*, 32, 1960, 1189-1203.

This paper presents a fairly complete review of detection theory as it is applied to certain psychoacoustic data. Detection theory is treated as a combination of two theoretical structures: decision theory and the concept of ideal observer. The paper discusses how statistical decision theory has been used to analyze the auditory threshold process. By treating the threshold process as an instance of hypothesis testing, two determinants of the process are recognized: (a) the detectability of the signal and (b) the criterion level of the observer. The theory provides a technic of analysis which allows one to obtain a quantitative estimate of both factors. The measure of signal detectability appears to be independent of the psychophysical procedure when the physical parameters of signal and noise are held constant. The concept of ideal observer is reviewed with special emphasis on the assumptions of the derivation. The usefulness of this concept is illustrated by considering the shape of the psychophysical function–the function relating the detectability of the signal to its intensity. A rather general model based on the concept of signal uncertainty is presented which attempts to explain this relationship. *(Author's summary)*

729. GUTTMAN, N., VAN BERGEIJK, W. A., and DAVID, E. E., Jr., Monaural temporal masking investigated by binaural interaction. *J. acoust. Soc. Amer.*, 32, 1960, 1329-1336.

Three experiments were conducted to study monaural temporal masking as manifested in binaural interactions. The experimental paradigm consisted of presenting a pair of clicks in one ear and a single "probe" click in the other. The ability of listeners to bring the probe click into fusion with one or the other contralateral click served as the principal measure of masking. Forward masking (inability to fuse the second click) was studied as a function of repetition rate and click levels. The forward-masking interval increased with increase of first-click intensity and, notably, decreased with increase of repetition rate. For the conditions and procedure of this experiment, the longest forward-masking interval was about 7 msec. Backward masking (inability to fuse the first click) appeared when the monaural clicks were approximate (up to 2 msec in this experiment) and the second click was much

more intense than the first. This type of backward masking was deemed a short-term effect and was distinguished from long-term backward masking. A model is presented to account for the improved resolution at high repetition rates. *(Authors' summary)*

730. HARRIS, J. D., Sealing of pitch intervals. *J. acoust. Soc. Amer.*, 32, 1960, 1575-1581.

When a subject is asked to bisect a pitch interval, the results tend to depend on the extent of the interval bisected. Smaller intervals yield a geometric mean, whereas larger intervals yield an arithmetic mean. In the present study, bisections of intervals no larger than a musical third produced a psychological pitch scale which agreed reasonably well with the common pitch scale of the standard piano keyboard. *(B.A.L.)*

731. REYNOLDS, G. S., and STEVENS, S. S., Binaural summation of loudness. *J. acoust. Soc. Amer.*, 32, 1960, 1337-1344.

A stimulus of a given sound pressure sounds louder when it is heard with two ears than when it is heard with only one ear. This fact is demonstrated by a series of experiments designed to quantify the ratio of binaural to monaural loudness at various stimulus levels. The methods used included magnitude estimation, magnitude production, one-vs-two ear ratio production, monaural-binaural loudness matching, and the cross-modality matching of loudness to the apparent intensity of a vibration. The results indicate that (a) monaural loudness grows as a power function of sound pressure with an exponent of about 0.54, whereas binaural loudness grows with an exponent of 0.6, and (b) the ratio between binaural and monaural loudness increases as a power function of sound pressure with an exponent of about 0.066. This ratio is 2:1 at about 90 db SPL. At lower levels the ratio is smaller, and at higher levels it is larger. *(Authors' summary)*

732. SCHODDER, G. R., and DAVID, E. E., Jr., Pitch discrimination of two-frequency complexes. *J. acoust. Soc. Amer.*, 32, 1960, 1426-1435.

Apparently the pitch difference limen (DL) for a single high-frequency sinusoid can be smaller in the presence of a nearby constant frequency component than in isolation. It is demonstrated that this effect arises from the time-envelope properties of the two-frequency complex. This result is consonant with those of Flanagan and Saslow who found that the pitch DL of a periodic vowel sound is smaller than the DL of a sinusoid at the fundamental frequency. *(Authors' summary)*

733. TONNDORF, J., Response of cochlear models to aperiodic signals and to random noise. *J. acoust. Soc. Amer.*, 32, 1960, 1344-1355.

Traveling bulges along the cochlear partition were recorded in response to gradual step-function signals (the simplest form of a transient). Such a bulge resembles a train of waves decaying both in time and in space. Since each half-wave grows longer in duration with its rank order, it forms its own individual envelope, including the location of maximal displacement. The latter location depends upon the time constant in essentially the same manner as that in response to steady-state signals upon inverse frequency. The point of over-all maximal displacement (usually due to the first half-wave) varies with the time constant of the applied signal but also with the signal shape. At any given point along the partition, the propagation velocity of each half-wave varies with the initial amplitude and its inverse time constant while its deceleration with distance depends upon the inverse time constant only. This is signified by the fact that the velocity-distance curves of various portions of each bulge tend to approach a common point which is frequently located beyond the helicotrema. The response to random noise (and to bands thereof) is a superposition, in time and in space, of responses to single transients in random distribution. *(Author's summary)*

HEARING DISORDERS

Audiometry

734. BENSON, R. W., COX, J. R., Jr., FOWLER, E. P., Jr., GREEN, D. M., POLLACK, I., and TRUMBULL, R., The evaluation of audiometers. *Nat. Res. Council–Armed Forces Comm. on Hearing and Bio-*

Acoustics, Working Group 35 Report, March 1960, Contract NONR 2300(05).

Nearly all commercially available audiometers are designed to meet the American Standard Specifications for Audiometers (1951) for *general diagnostic purposes*. Instruments of various companies do not differ much in basic performance but they do differ considerably in the variety of accessory circuits and equipment available for special tests, including speech audiometry. . . . *Screening audiometry* may be performed with almost any type of audiometer, from very simple individual manual instruments to automatic group audiometers. . . . Two generally acknowledged shortcomings of commercial audiometers, particularly for military use are lack of ruggedness to withstand transportation and hard use, and difficulty in assuring initial accuracy and particularly in the maintenance of calibration. This situation might be improved if military specifications for ruggedness of audiometers and for an acoustic calibration unit were prepared. . . . Brief descriptive summaries of 25 models of audiometers that their makers *claim* meet the present or proposed ASA design specifications are included in this report. A few other instruments that might be considered for screening audiometry are also listed. . . . Other recommendations [are] . . . . (a) Before selecting an audiometer, define clearly the general purpose *(diagnosis, monitoring*, or *screening)* for which it is to be used. Evaluate the probable case load, the availability of trained operators and maintenance personnel, and the time allowable per man tested. (b) In estimating costs, include the necessary sound-isolation booths or other facilities for noise control, the number and the training of operators and maintenance personnel, and the time required per test by different types of instrument. (c) Maintenance of accurate calibration is vital, particularly for monitoring audiometry. Adequate provision for it is mandatory. (d) Both subjects who are tested and the personnel giving the tests must be adequately *instructed* and *motivated*. The success of audiometry hinges on these factors quite as much as it does on the proper design, calibration, and upkeep of the audiometers that are used. *(Authors' summary)*

735. GIACCAI, F., and BERLOCO, T., Le curve audiometriche nelle varie età. (Audiometry and age.) *Bol. Mal. Or. Gola Naso*, 78, 1960, 425-447.

Ninety-three audiometric tests have been performed on women and 114 on men aged between 20 and 91. The tests have been done on subjects without affections or diseases of the ear. The audiometric tests for each decade have been reported and the observations regarding the total group of subjects, and separately for women and men, are discussed. The minimal and maximal values for every decade of both sexes have been also reported. The results have been compared to the research of other authors, particularly to Bunch, Leisti and Jiohansen. *(Authors' summary)*

736. GRAHAM, J. T., Evaluation of methods for predicting speech reception threshold. *A.M.A. Arch. Otolaryngol.*, 72, 1960, 347-350.

Four methods of estimating the SRT were evaluated: (a) the three-frequency average 500-2000 cps.; (b) the two-frequency average advocated by Fletcher; (c) the method of Quiggle et al. using a multiple regression equation, and (d) the Zarcoff method of predicting from the threshold for white noise. The correlation between SRT and the two-frequency average was computed using Fletcher's data but using only those cases where information was presented for both ears. By reducing the total data it was possible to compute the correlation between the right and left ear of each subject. The correlation for the left ear was .983, the standard error of estimate (S.E.) was 4.56 db. For the right ear it was .969, S.E. 5.5 db, and for right and left ears .977, S.E. 4.7. The correlation between the right and left ear on the basis of SRT scores was .651. Audiometric data were obtained on 191 ears: 92 ears with perceptive loss; 25 with conductive loss; 45 mixed; and 29 normal ears. The three-frequency average was used in predicting the SRT. A correlation of .942 was obtained, S.E. 7.26 db. No cases with a functional component were included. All subjects had had GSR tests as well as conventional audiometry. One hundred out of the 192 ears were selected at random and used as a comparison of the two-frequency and three-frequency average

methods. The two-frequency average produced a correlation of .986, S.E. 3.5 db; the three-frequency average, a correlation of .981 with S.E. 4.1 db. One hundred additional cases were drawn at random from the clinic files. In this group there were nine cases of functional overlay. The correlation between the three-frequency average and the SRT levels for these cases was .855 with S.E. 12.2 db. This finding is confirmation of the clinical observation that there will be a greater variance with functional overlay cases than with true organic cases between the pure tone average and SRT levels. The author noted that Quiggle et al., using a multiple regression equation, obtained a correlation between weighted pure-tone thresholds for 500, 1000 and 1500 cps and SRT levels of .91 with S.E. 5.0 db. Zarcoff proposed using thresholds for white noise to predict SRT levels. He reported a median correlation of .951 and a median S.E. of 6.06 db. The validity of the results published by Zarcoff are questioned because there is some doubt as to the random sampling procedures employed and also because of an inflated N obtained by counting each ear of a given subject as an independent measure. In summary, it was found that with SRT measurements for any of the four predictor methods used were uniformly high, i.e., above .90 with S.E. of close to 5 db. It is recommended that either the two-frequency or three-frequency method be adapted as the method of choice inasmuch as the use of the multiple regression equation does not improve the effectiveness of prediction and the white-noise method needs further validation before being accepted clinically. The author points out that although the pure-tone average estimate of the SRT is useful in dealing with large N's, and for research work, its validity breaks down in assessing a given individual. If predictions are based on a pure-tone average, they will be within ± 5 db 67% of the time; but 28% will be in error by ± 5 db to ± 10 db, and 5% will be in error by more than ± 10 db. *(J.J.)*

737. KARASHIMA, M., TSUJI, M., ISHISAWA, H., TAKAMOTO, A., and KARASHIMA, T., A study on the correlation between the reliability of pure-tone audiometry in young children and their mental age. *Otol. Fukuoka*, 6, 1960, 162-166.

We subjected 66 children in a kindergarten, in the lower and middle grades of a primary school, to pure-tone audiometry and mental tests, and studied the correlation between the reliability of pure-tone audiometry and their mental age with the following results: (a) One single measurement of pure-tone audiometry can give no reliable results with children of mental age of up to ten years. (b) There was a child in the lower grades of a primary school who showed mental age of more than 11 years and fixing of the threshold at the first measurement. Therefore reliability cannot be determined only by calendar age. (c) But even with children having mental age of no more than six years we can expect to obtain results reliable in some degree if measurements are repeated on them. *(Authors' summary)*

738. MASPETIOL, R., SEMETTE, D., and MATHIEU, C., Introduction à l'étude des troubles auditifs corticaux. (Introduction to the study of cortical auditory difficulties.) *Ann. Oto-Laryngol.*, 77, 1960, 286-295.

The authors consider pure-tone tests and speech tests of hearing as two extreme poles. Their work attempts to investigate processes of identification, time, synthesis and binaural integration in between the two poles. They have found a prolongation of auditory reaction time in cortical lesions. It involves both left and right temporal lobes in most cases of temporal lesions whether they are vascular, traumatic, or tumorous. Usually both ears are involved, rarely a single ear and sometimes, paradoxically, the ear homolateral with the cortical lesion. Research into auditory reaction time permits understanding of the nature of subtle auditory difficulties which would not be revealed by usual pure-tone and speech audiometry. A prolonged auditory reaction time is characteristic of presbycusis; if an older person has a normal auditory latency time, his difficulty is not presbycusis. To study binaural integration, they follow the work of Chocolle in studying differential thresholds of intensity, for which he has suggested the two following clinical hypotheses: (a) the differential intensity threshold increases in amplitude

in the presence of a constant contralateral sound of the same frequency, (b) the differential threshold of intensity decreases in amplitude in the presence of a constant contralateral sound of a different frequency. In cortical lesions involving the temporal lobe, they have found an absence of "integration," i.e., the absence of inhibition in the presence of a contralateral sound of the same frequency, and the absence of facilitation in the presence of a contralateral sound of a different frequency, and especially of lower frequencies. They report a lack of integration in most cases with cortical lesions. The lack of integration is usually bilateral, sometimes unilateral and homolateral with the cortical lesion, and contralateral in one case of aphasia. They have not found such integration difficulties in cases of peripheral deafness; however, cases of peripheral deafness with recruitment difficulties of integration have been noted. *(R.W.A.)*

739. SORTINI, A. J., Hearing evaluations of brain-damaged children. *Volta Rev.*, 62, 1960, 536-540.

This paper discusses the difficulty of testing the hearing of the brain-damaged child and the brain-damaged child who has cerebral palsy, either of whom also may be mentally retarded. Techniques discussed include use of noise makers, tuning forks, speech audiometry, objective pure-tone audiometry, and subjective pure-tone audiometry. The paper reports on 15 cases tested over a five year period. Objective audiometry (GSR) test-retest results were in agreement only 47% of the time. The author stresses that it is preferable to conduct a series of tests to establish a pattern of response rather than to accept the results of one test as conclusive. He believes that the GSR is a valuable diagnostic tool in the total evaluation of the child who is brain damaged and it can be used to advantage as one of a battery of tests. In and of itself, it should not be considered infallible especially in the testing of cerebral-palsied children. It has been found to be of value in excluding deafness as an etiological factor in persons with delayed speech or language development. This kind of testing is useful in differential evaluation of hearing loss, mental retardation, aphasia, emotional disturbances, malingering, etc. The author, in his discussion of subjective pure-tone audiometry, reports that it is the hardest to carry out with the cerebral-palsied child. He suggests that clinicians often fail to allow sufficient time after stimulus presentation for the child to respond. *(J.B.M.)*

740. STOCKDELL, K. G., A hearing conservation program. *Volta Rev.*, 62, 1960, 376-378.

This paper describes the Hearing Conservation Program initiated in the state of Kentucky in 1951. It further describes the development of audiological centers in 1954. The main theme is the need for and the development of regional audiological centers and the establishment of closer relationships between the centers that exist and the community. Volunteer workers are used to doing the screening audiometry, but the regional director does the pure-tone tests. Follow-up includes medical referral and recommendations for rehabilitation. Further expansion and development of the program is planned. *(J.B.M.)*

741. WEISS, H. H., and WINDREM, E. O., Some methodological problems in identification of functionally deaf. *A.M.A. Arch. Otolaryngol.*, 72, 1960, 240-246.

This paper is a report of a pilot study which used psychometric tests coupled with questionnaires and observational data in an attempt to identify functionally deaf persons from a population of veterans with service-connected hearing disability. Functional deafness was defined as an auditory malfunction for which either no organic basis can be found or the degree of hearing loss is not consonant with the extent of the organic condition. During a seven-week period all veterans reporting for audiological evaluation (137) were required to fill out an information sheet designed to supply actuarial data and an Audiology Clinic Questionnaire designed to elicit attitudes relevant to their hearing status. The audiologists completed a Test Behavior and Observation form on each case and for each test administered. Because of practical difficulties the psychological battery was administered to but 39 of the 137 subjects. Four of the 39 did not take or complete the MMPI. The battery consisted of selected sub-tests from the WAIS, the short form of the MMPI, and K scale items of the

MMPI used in computing a Dissimulation Index. The detection of dissemblers, i.e., malingerers, within the functional group was to be based on agreement of judgment between the audiologist and the Dissimulation Index. Subjects were assigned to the functional group on the basis of test variability, i.e., differences greater than 6 db on the following: pure tone–speech reception threshold; purse tone tests 1-2; pure tone 1–galvanic skin reflex; speech reception threshold–galvanic skin reflex. In general, the results failed to differentiate between the functional and organic groups on the many personality, intellectual and actuarial variables. The MMPI data not only did not differentiate among the groups, but showed clinical scales that were equal to or higher for the organic than the functional. The authors conclude that "in the Veterans Administration population at least, the incidence of emotional disturbances among the organically deaf appears to be extensive." They feel that the MMPI may be of use in characterizing the functionally deaf case after he has been identified on the basis of audiological data. Many of the patients classified as functional on the basis of audiometric discrepancies were not judged as dissembling by the audiologists. It was also found that a person is more apt to be judged to be dissembling on the basis of discrepancy between PT and SRT than on differences between PT 1 and 2. Disagreement was high among examiners about a particular subject. Of the 39 cases, there was disagreement on 22 subjects. The two audiologists with only two months experience categorized subjects as functional much less frequently than the two more experienced examiners. The authors suggest that the decision as to categorization in any given case should evolve out of a group meeting where all observations are pooled and discrepancies reconciled. *(J.J.)*

742. WRIGHT, H. N., Measurement of perstimulatory auditory adaptation. *J. acoust. Soc. Amer.*, 32, 1960, 1558-1567.

Although various authors have published results of studies on perstimulatory fatigue, these results show marked discrepancies. The present study is an attempt to explain these apparent discrepancies. A theoretical discussion presents the different methods employed of measuring perstimulatory adaptation. It is quickly shown that because of the methods employed, some of these methods actually measure recovery rather than adaptation. Other methods, based on a comparison with the contralateral control ear, assume that this ear does not adapt significantly. The present study shows that most discrepancies in results stem from adaptation in the control ear during the process of making the required judgment. As the control ear adapts, the degree of adaptation in the experimental ear is increasingly underestimated. *(B.A.L)*

Auditory Training

743. BOURGET, J., MAZÉAS R., and GUÉRIN, M., Place de l'appareillage individuel dans la rééducation vocale et auditive des enfants sourds. (The role of individual hearing-aids in the speech and auditory reeducation of deaf children.) *Ann. Oto-Laryngol.*, 77, 1960, 648-658.

The authors present oscillograms showing increasing distortion of sounds in passing from the audiometer to the group aid, and then to the individual aid. The distortion is greatest at 125 cycles, and diminishes at higher frequencies, disappearing at 1000 cycles. Because of this distortion, permanent equipment should be used in working with deaf children for at least two years in order to establish good voice habits. After that, portable equipment is used. This same general approach is best for cases of acquired deafness, when the age of onset is earlier than five years. One must not add the distortion of an individual aid to the handicap of the rough sound-filtering of deafness without a period of adaptation. *(R.W.A.)*

744. BROWN, T. N., The induction loop system. *Silent World*, 14, 1960, 291-293.

The author, headmaster of the Tottenham School for the Deaf, was one of the first to use the Loop System in a school. He reviews his experience with the loop system and his summary includes the following points: (a) Normality is important for the deaf child and the freedom of movement allowed by the loop installation leads to this. (b) A child with normal hearing up to 4,000 should not be in a school for the deaf, so why be concerned beyond that range. (c) The nursery stage is the best time

for auditory training and the loop is ideal for that age. (d) With regard to the partially deaf the author reserves judgment. (e) He agrees on the greater provision of transistor aids with lops and more use in cinemas, dance halls, assembly halls, and churches. *(H.F.S.)*

745. LLOYD, G. T., A beginning experimental program in the use of the telephone for deaf and hard of hearing children. *Amer. Ann. Deaf*, 105, 1960, 427-429.

A description is presented of the method which has been experimentally employed at the New Mexico School for the Deaf to teach deaf and hard-of-hearing children through the age range 12 to 18 years to use the telephone within the limits of their auditory capacities. Fifteen of the 16 children who received the training learned to adequately discriminate signals auditorily with the special amplification equipment. Prognosis for further training in the use of the telephone covering levels ranging from two-way conversations to simple emergency calls appeared good. *(C.P.G.)*

Diagnosis and Appraisal

746. BENINCASA, T., Comportamento funzionale del labirinto posteriore nei postumi da trauma cranico chiuso. (Function of the posterior labyrinth in cases of skull injury.) *Ann. Laringol. Otol. Rinol. Faringol.*, 34, 1960, 476-483.

The vestibular function is examined in 232 cases of skull injury. The author described the results of the vestibular examinations discussing the significance and pathogeny. He comes to the conclusion that if cochlear lesions of central origin are rare, vestibular manifestations of central origin are most common. He deems that after the skull injury a syndrome occurs in which symptoms of peripheric and central origin are mixed. *(Author's summary)*

747. CADARIU, E., Valoarea chirurgiei în sindromul de anchiloză stapedo-vestibulara. (The value of surgery in the syndrome of stapedovestibular ankylosis.) *Oto-Rino-Laringol.*, 5, 1960, 243-259.

Surgical intervention in the syndrome of stapedovestibular ankylosis can only be carried out under optic magnification and after prolonged training on corpses. The author describes the method to be applied during the period of training. The clinical and audiometric factors are listed, on the ground of which the patients may be included in the category of operable cases. In connection with statistical data, the author discusses the reasons for which mobilization of the stapes is more often practiced than fenestration. The results of the latter operation are discussed. A personal technique is reported which affords an estimation of the function of the *fenestra rotunda*. The pathological patterns encountered in mobilization of the stapes are described. The author then describes the methods of direct mobilization of the stapes, as well as a personal method, and the methods applied in trans-stapedic fenestration. The pathological patterns encountered in operations of the *fenestra rotunda* are also mentioned. Finally, the results obtained in operations on the fenestrae of the labyrinth are reported in percentage rates per type of operation. *(Author's summary)*

748. FOTIN, A. V., Rentgenoterapia pri khronicheskikh gnoinykh srednikh otitakh. (Roentgenotherapy in chronic suppurative otitis media.) *Vest. Oto-Rino-Laringol.*, 22, 1960, 43-49.

Under observation were 50 patients affected with chronic suppurative otitis media who were treated with X-rays. The result of treatment was a complete recovery in 29 cases, a considerable improvement in 12, and 9 patients showed no therapeutic results. In a majority of cases there was an improvement in hearing. Microbiological investigation established that the presence in the pus of Proteus vulgaris, B. coli of Bacillus pyocynaeus is an unfavorable factor for complete recovery. Pathohistological studies indicated that following X-ray irradiation there occur in the granulations and polyps manifestations of sclerosis. *(B.V.M.)*

749. FOXEN, E. H. M., The place of stapes mobilization in the relief of deafness. *Practitioner*, 185, 1960, 54-63.

The author presents a brief review of the subject ". . . with a view to helping the practitioner to answer many questions which may be put to him by his patients." The usefulness of mobilization procedures for otosclerosis and adhesive deafness is men-

tioned. The general operating technique is described, and the probability of improved hearing resulting from the operation is discussed. *(J.L.S.)*

750. KAWATA, S., MIYAGI, J., MATSUMURA, T., TAKEDA, H., and KAWATA, T., About the treatment of nerve deafness with vitamin B_6. *Otol. Fukuoka*, 6, 1960, 233-239.

The authors tried Aderoxin Calcium containing 10 mg Vitamin B_6 to treat 47 cases (84 ears) of nerve deafness with 38.1% efficacy. The percentage cannot be said to be high, but this is remarkable in view of the fact that most cases had already received various treatments and their conditions were fixed. *(Authors' summary)*

751. KOS, C. M., Results of stapes mobilization and vein plug stapedioplasty. *J. Amer. med. Assn*, 174, 1960, 2187-2191.

"Among 1,020 stapes mobilizations, 715 were attempted by the indirect approach to the capitulum and 305 by the direct approach to the footplate. In the 715 patients of the indirect-approach group, 11 of 100 resulted in air-bone gap closure or maximum hearing improvement permitted by the level of auditory nerve function. Only 2 of 100 achieved normal hearing. In the 305 patients of the direct-approach group, 24 of 100 produced maximum hearing improvement and 8 of 100 resulted in normal hearing. In the 170 patients who underwent vein plug stapedioplasty, 90 of 100 achieved maximum hearing improvement and 50 of 100 produced normal hearing." Kos concludes that mobilization of the stapes by either the direct or indirect approach to the footplate may be initially successful in an appreciable number of instances but that the magnitude and the duration of the resulting hearing improvement in the majority of them are not sustained. Reankylosis of the stapes and consequent regression of hearing occurs rapidly within the first year postoperatively and continues with decreasing frequency year after year to undermine the initial successes. These failures occur because the otosclerotic bone not only invades the footplate but grows out from the sides to eventually occlude the oval window niche. Kos' current procedure is called "vein plug stapedioplasty" and is described in detail. It consists of complete stapedectomy, followed immediately by the insertion of a "vein plug" into the exposed oval window and the creation, with a stainless steel wire prosthesis, of an incudovestibular arthroplasty which re-establishes the continuity of the ossicular chain and results in an intact sound conduction mechanism. Patients usually experience vertigo for 24 hours after surgery, but recovery is rapid and they may be discharged on the second postoperative day. Marked improvement of hearing occurs within two weeks and usually continues for six weeks to three months postoperatively. Regression of hearing has not made a significant appearance in the stapedioplasty group. Progress studies will be continued and reported periodically as further changes occur. *(M.H.M.)*

752. LAZZARONI, A., Un caso di "Morbo di Paget" a localizzazione cranica. (A case of Paget's disease on one side of the head.) *L'Oto-Rino-Laringol. Ital.*, 29, 1960, 484-495.

A case of Paget's disease, strictly localized on one side of the head is described. The author points out the sensitive and sensorial . . . signs caused by the changes in the cranio-facial mechanics and the various stages of the pathological pattern, dealing particularly with the progressive lesions affecting the cochlear vestibular apparatus. *(Author's summary)*

753. McLAY, K., Investigation of perceptive deafness by Békésy audiometry. *J. Laryngol. Otol.*, 74, 1960, 566-580.

After reviewing the procedure of Békésy audiometry and mentioning that "reduction of the excursions or difference limen is thought to have the same significance as recruitment and to demonstrate that the end organ of hearing . . . is affected," it is reported that in a comparison of Békésy audiograms and loudness balance tests in 52 cases of unilateral deafness, there was agreement in 41. Békésy audiometry findings are then reported for a series of perceptive-deafness cases for which diagnosis appeared to be definite. Width of pen excursions was often normal for low frequencies and reduced for highs in Ménière's disease with high-tone loss (87 cases) or with flat losses (29 cases); excursion width was reduced in only two of eight cases of Ménière's with ascending audiograms. Re-

duced excursion was found in 11 out of 12 cases of noise or blast trauma, in all of 13 cases of familial deafness, in all of the 12 cases of sudden perceptive deafness which could be tested, in the single case of measles deafness, in both of the two cases of quinine deafness, in both of the two cases of meningococcal deafness, in both of the two cases of herpes oticus, and in both of the two cases of acoustic neurinoma. The latter two cases, however, displayed abnormal adaptation, a phenomenon noted in only four out of 124 cases of Ménière's disease but in 15 of a total of 323 cases of various diagnoses. Of four cases of congenital syphilis, two showed reduced excursion width and two did not. Of cases associated with a cold or flu, four showed reduced excursion and 10, including a case of myringitis bullosa, did not. Békésy audiograms were obtained for 13 cases of head injury, eight of congenital deafness of unknown etiology, two of mumps deafness, two of streptomycin deafness, three of deafness resulting from vascular lesion, one of deafness associated with temporal lobe tumor, one with brain-stem lesion, one following malnutrition, one with jaundice, five of "aviation perceptive deafness," one following confinement, and one attributed to an epidermoid tumor involving the petrous apex. None of these cases displayed reduced excursion width. Cases of otosclerosis "showed no reduction of the difference limen unless perceptive deafness intervenes." Many Békésy audiograms done before and after stapes mobilization revealed only one case of post-surgical cochlear damage. 49 illustrative Békésy audiograms. *(C.L.)*

754. MLECHIN, B. M., Blizhaishie i otdalennyie resultaty timpanoplastiki. (Immediate and remote results of tympanoplasty.) *Vest. Oto-Rino-Laringol.*, 22, 1960, 52-57.

A study was made of 176 patients for a period from 6 months to 3 years following tympanoplasty. In 24% of the patients with a small tympanic cavity the graft resolved or perforated. An improvement of hearing of conversational speech was established in 61% of the patients. In order to make the graft more stable a cooled, preserved autotransplant was used, which was stored for 6-7 days in various preserving solutions. *(B.V.M.)*

755. NANDATE, J., On the relation between tinnitus and hearing impairment in nerve deafness. *Otol. Fukuoka*, 6, 1960, 240-244.

The author made various investigations of tinnitus in the patients of nerve deafness. Chief findings are as follows: (a) Of 459 cases of nerve deafness, 67.8% were accompanied by tinnitus. (b) The percentage of the accompaniment of tinnitus in the prepuberty period (below 20) is smaller than that in the post-puberty period (above 20). This difference is statistically significant. (c) The accompanying tinnitus is observable in the frequency order of acoustic trauma, streptomycin deafness, Ménière's symptom complex and head injury. Whether this difference is due to the differing causes themselves or whether it is due to other factors, e.g. age, could not be ascertained in the present investigations. (d) Except a few cases, the acuity of hearing is worse on the tinnitus side than on the non-tinnitus side. This difference appears in the high tone area. *(Author's summary)*

756. PROCTOR, B., Pitfalls in tympanoplasty. *Laryngoscope*, 70, 1960, 1433-1447.

Various technics for tympanoplasty are outlined, and the contraindications for and limitations of such surgery is presented. In 65.5% of 273 cases operated over a three-year period, the air-bone gap was closed by 30 db; in another 27.5%, the gap was closed by 15 db. When surgery raised the hearing level by 10 db or more, the increased hearing level was usually due to a sensory-neural impairment. In Type IV tympanoplasty some delayed increase in hearing level may have been due to stiffening of the annular ligament. In Types III and IV tympanoplasty the best results were obtained when the round window niche was normal and when the skin grafts did not perforate. *(R.G.)*

757. Şt. GÎRBEA, SALAMON, E., BODEA, I., and MĂRGINEANU, N., Radioterapia în surdităţile tubare. (Radiotherapy in tubal deafness.) *Oto-Rino-Laringol.*, 5, 1960, 207-212.

In the ENT. Clinic of Timişoara, 20 patients suffering from tubal deafness were subjected to radiotherapy. The indication consisted in the persistence of a syndrome

of partial tubal obstruction after removal of rhinopharyngeal causes (adenoids, processes of the turbinates, deviation of the nasal septum, chronic sinusitis). Roentgenotherapy was applied as follows: 180 KV, 0.5 Cu filter, pre-auricular field, 6X8 cm, focal distance 40 cm, 150 r per sitting. The sittings were repeated four times on each side at intervals of two to four days. Marked improvement was obtained, with recovery of socially normal hearing in nine cases and improvement in four cases. However, the audiometric curve remained below 30 decibels and audible whispered speech was perceptible at 1 m. The treatment acts by re-establishing the permeability of the eustachian tube. The more recently tubal obstruction has set in, the better are the results obtained. *(Authors' summary)*

758. SALIS, B., Per una più equa valutazione degli esiti funzionali nello svuotamento petro-mastoideo totale. (Evaluation of functional status after radical mastoidectomy.) *Bol. Mal. Or. Gola Naso*, 78, 1960, 368-386.

The radical mastoidectomy has been always considered a surgical operation destructing the middle ear and worsening the previous hypoacusis. Sometimes the hypoacusis, according to several authors, could increase and become a complete deafness. Even if the purpose of the radical mastoidectomy is far from a prophylactic operation against deafness, the author examines the functional results of that operation to clarify the consequences of radical mastoidectomy especially when a contralateral hearing loss coexists. Reviewing the audiometric tests of 116 patients operated on for radical mastoidectomy (from three months to four years) the author states that a complete deafness is extremely rare as a consequence of the operation when the surgical technique is correct and the epithelization of the operative cavity is good. The author reports the following results: 20% of the patients show a good improvement 25-30 db loss; 56%, 30-50 db loss; 18%, 50-70 db loss; 4% over 70 db loss. In conclusion in 76.7% the hearing loss is between 0-50 db, while in 22.3% the loss is over 50 db. *(Author's summary)*

759. SCHUKNECHT, H. F., The stapedectomy operation. *Hearing News*, 28, 1960, 8.

The writer describes the replacement of the stapes by tantalum or stainless steel wire. The procedure overcomes re-ankylosis, as is often encountered in mobilization of the footplate. The incidence of maintaining good hearing over a period of months is found to be better than in any other procedure. Two or three percent of the cases discussed have experienced postoperative sensory-neural losses. *(D.A.H.)*

760. SEGAL, M., Despre surdităţile labirintice bruşte uni-sau bilaterale. (On sudden uni- or bilateral labyrinthine deafness.) *Oto-Rino-Laringol.*, 5, 1960, 271-276.

Among the multiple clinical forms of labyrinthine deafness, sudden essential labyrinthine deafness, which as a rule is unilateral, accompanied by slight vestibular signs, may be considered as an autonomous syndrome. Besides the vascular aetiology, with spasm, thrombosis, or agglutination in the terminal branches of the internal auditory artery, the author discusses the viral aetiology in patients under 40 years of age, in whose past history no cardiac or circulatory disorders are prominent, such as in cases of facial paralysis *a frigore*. Treatment with peripheral vasodilators, corticotherapy, or cervical sympathetic infiltration applied as soon as possible after the accident, sometimes result in total or partial recovery of hearing. *(Author's summary)*

761. SHEA, J. J., Jr., Fenestration of the oval window—four-year report. *J. Amer. med. Assn*, 174, 1960, 2181-2186.

Shea no longer uses the classic stapes mobilization procedure because, in his series, no more than 5% of patients operated on five years ago have maintained an air-bone gap closure to within 10 decibels. Stapes mobilization ignores the bony ankylosis of the stapes in the oval window. Shea has avoided the procedure of removing the arch and head of the stapes, pulverizing the thin central portion of the footplate, and putting in a polyethylene strut as advocated by House and others. He does not consider it reasonable to expect that the pulverized footplate would not heal, since even the thinnest and bluest footplate removed at surgery, as reported by Henner, Guilford,

and Shea, were found to be invaded by otosclerotic bone. He anticipated that healing of the pulverized footplate will undoubtedly take place with loss of hearing improvement. Shea considers the anterior crurotomy operation of Fowler a satisfactory procedure in older patients only with a localized otosclerotic focus confined to the anterior half of the oval window and footplate. Only 1% of the author's 1400 cases have suffered loss of hearing of any degree and only 0.5% have had a total loss of hearing with this technique. Shea has never used a chisel on an ear during the vogue of these instruments and thus avoided the trauma to the cochlea which these chisels cause. None of the patients in the present series had a prior mobilization of the stapes operation which Shea believes increases the likelihood of further hearing loss taking place when the fenestration of the oval window is done. Shea reports a consistent improvement in bone conduction following this operation which averages approximately 10 decibels for the three speech frequencies and was sustained for more than one year. *(M.H.M.)*

762. TEIŞANU, E., VERNEA, I., and MANOLE, A., Contribuţii la problema hipoacuziilor nevrotice. (Contributions to the problem of neurotic hypacusia.) *Oto-Rino-Laringol.*, 5, 1960, 261-269.

In order to detect neurotic hypacusia systematically the repetition of liminal audiograms in all cases of hypacusia has proved very useful. A method of computation is proposed for the estimation of discordances between audiograms repeated at the same sitting. For the diagnosis, a balance test was used even in cases of bilateral equal hypacusia, or in the absence of hypacusia at a certain frequency. Under the name of "threshold equalization" a phenomenon which may be useful in the diagnosis of neurotic hypacusia is described. Out of 100 patients which formed the object of this study, neurotic hypacusia was diagnosed in 58 cases and a neurotic component of organic hypacusia in 22 cases. Except for one case of psychasthenia, the others exhibited signs of asthenic neurosis (neurasthenia) with various elements belonging to other types of neurosis. Stress is laid on the importance of the problem in connection with the indication of surgical treatment of deafness. *(Authors' summary)*

763. THORNE, B., Psycho-tell: an aid in the estimate of functional auditory disorders. *A.M.A. Arch. Otolaryngol.*, 72, 1960, 626-630.

A check list was developed to help clinicians in detecting functional hearing losses. It consists of 58 observational items that were found to be typical of patients diagnosed as having non-organic hearing losses. When using the check list clinicians are asked to observe the patient in taking the case history, during medical examination and during audiologic examination. A simple method of checking yes, no or questionable is utilized. The author believes, on the basis of clinical experience, that the intentionally-involved patient is more verbal in his explanation, history, self-diagnosis and need to cooperate and is also more inconsistent in most aspects of verbal and physical activities than the emotionally-involved patient. *(J.J.)*

764. UEKI, K., and WALKER, A. E., Ménière's syndrome or aural vertigo: surgical therapy. *J. nerv. ment. Dis.*, 130, 1960, 567-577.

The authors first discuss the symptomatology and differential diagnosis. Thirty cases of Ménière's syndrome were treated by intercranial section of the vestibular nerve with one death. Vertiginous attacks were eliminated in all but four of the cases. Relief from tinnitus was associated with an increased impairment of hearing although elimination of vertigo did not show this relationship. *(E.H.N.)*

765. WILSON, T. G., Advances in the treatment of diseases of the ear, nose and throat. *Practitioner*, 185, 1960, 458-465.

One or two paragraph discussions are devoted to the following subjects: (a) the treatment of deafness; (b) mobilization of the stapes; (c) chronic suppurative otitis media; (d) cholesteatosis of the middle ear; (e) myringotomy; (f) Ménière's disease; (g) epidemic vertigo; (h) Bell's palsy; (i) allergic rhinitis; (j) malignant disease (of the larynx and postnasal area); and (k) antibiotic therapy. References are made to studies reported during the past decade only. *(J.L.S.)*

EDUCATION

766. ANON., Short bibliography of books on the education of the deaf and educational psychology. *Teach. Deaf*, 58, 1960, 266-272.

Listed by author, title, publisher, and price in English pounds, over 200 books relating to deafness are available for purchase through a local bookstore in Manchester, England. *(M.S.K.)*

767. ANON., The education of partially deaf children in units attached to ordinary schools. *Teach. Deaf*, 58, 1960, 430-432.

A primary unit of hard-of-hearing children ages 4 to 11 and a secondary unit, ages 11 to 15, drawn from classes of hearing children in Manchester, England, are described. These classes do not include congenitally deaf children. Integration with hearing children is limited to social activities like school outings, arts and crafts classes, and physical education. Training in the use of a hearing aid is an important factor in the program. Some disadvantages in the rehabilitation of these children in classes with hearing children are poor acoustic conditions in the classroom, unsympathetic attitude toward the handicap, large classes for hearing children, and excessive noise in "activity methods" in ordinary schools. Efficiency of units for partially deaf children is dependent upon the size of the administrative area, screening and diagnostic test facilities, and the presence of a good preschool audiology clinic. *(M.S.K.)*

768. ARTOBOLEVSKY, A. N., Vecher nauchnykh opytov v shkole glukhikh. (An evening of scientific experiment in a school for the deaf.) *Spetsial'naya Shkola.*, 95, 1960, 40-42.

Deaf children are as interested in natural phenomena as normal ones. Though most of their questions can be answered in class, work outside school also helps, since methods of teaching natural science are sometimes not so good as they should be. The following is one of the first attempts at an evening of scientific entertainment for older deaf pupils of the Lyublinsky School near Moscow: (a) an illustrated report was made on the latest achievements of Soviet science and technique, such as the use of atomic energy for peaceful purposes, power-stations, atomic ice-breakers, the launching of artificial earth satellites and the Soviet fight against atomic weapons; (b) then followed experiments to show the existence of air, its properties and uses, and some of these were repeated by the pupils themselves, who had made all the equipment in their work-shops; (c) after a quiz on the subject, "Air is all around us," a summary was given of the pupils' answers. The evening convinced all who took part in it of the importance of such work in clarifying knowledge and imparting new facts. *(H.G.W.)*

769. CORY, P. B., Leisure reading for deaf children. *Volta Rev.*, 62, 1960, 36-38, 220-221, 461, 521, 550-551.

Each month Mrs. Cory reviews in the Volta Review new books that are appropriate for leisure reading of deaf children. She discusses the book and how it might be presented by the parent or teacher to children of various age levels. *(J.B.M.)*

770. DILLON, T., The New Mexico School for the Deaf. *Teach. Deaf*, 58, 1960, 86-102.

The history and development of the New Mexico School for the Deaf from a private school in 1885 to its present status as a state residential school is described. *(M.S.K)*

771. EWING, A. W., Report on meeting of the advisory committee on the training of teachers of the deaf. *Teach. Deaf*, 58, 1960, 390-393.

Degrees granted by the Department of the Deaf, University of Manchester, were reported for the years 1959-60 and 1960-61. A proposal was made that audiologists with advanced training should be on the staffs of schools for the deaf. Current research projects in the Department of the Deaf include a detailed survey of children with defective hearing, a study of deaf children with other handicaps, and psychological studies of pupils with impaired hearing in ordinary schools. Results of tests of different types of hearing aids conclude "that a special type of hearing aid is needed for use by severely and profoundly deaf children with losses exceeding 90 decibels. Capacity to hear their own voices through hearing aids was shown to be an essential factor." Other investigations are concerned with construction of diagnostic tests, analy-

sis of language usage with reference to current methods, longitudinal studies of pupils who have had home training in ordinary schools and special schools. A new book, *Teaching Deaf Children to Talk*, is in preparation to replace *Speech and the Deaf Child. (M.S.K.)*

772. GARRETSON, M. D., The simultaneous method. *Amer. Ann. Deaf*, 105, 1960, 434.

The simultaneous method is defined as "the simultaneous use of speech, lipreading, hearing aids, fingerspelling and the language of signs in conversing with the deaf." Users of the method are not concerned with teaching the fundamentals of oralism or manualism, but rather, with the conveyance of ideas fluently and meaningfully. The system presupposes a background of oralism, manualism and auralism, or any combination of the aforementioned methods on the part of the student. The person using the method "speaks, fingerspells and signs every word in logical and correct English word order." The method is purported to help speech and speechreading abilities. It is the recognized method at Gallaudet College. *(C.P.G.)*

773. GIANGRECO, C. J., Parental counseling—a must. *Volta Rev.*, 62, 1960, 543-545.

The author thinks that one of the biggest problems facing administrators of schools for the deaf is that of parent counseling. He feels that persons in the field of administration should begin to take time to see what can be done to help parents to understand their children, understand the school, and understand themselves to a greater degree. He has listed a number of questions that seem to confront and confuse parents. In order to help overcome some of these problems, the Iowa School for the Deaf two years ago initiated a program called, "Guest of the School." The parents come to the school and are permitted to stay two days and two nights. They are given an opportunity to visit in the class, see the work of their children, and understand the school to a greater degree. Last year, 102 couples visited under that plan. This past year, another program was inaugurated. This consisted of writing individual letters to all parents whose children were not doing graded work or were not following the regular curriculum in school. Report cards for most students in this group were abolished since they were rather misleading; when they were used, they were marked, "your child is not able to do graded work and is graded according to his own ability." Within special classes for the multiple-handicapped child with a severe hearing loss, other problems are becoming apparent, and the author feels it is only proper that the parents should know of their child's program and how they might help. *(J.B.M.)*

774. GOUGH, J. A., Use of pictures in teaching the young deaf child at home. *Amer. Ann. Deaf*, 105, 1960, 442-445.

Teachers of the deaf have long realized the great potential of utilizing pictures for developing vocabulary and language. It would appear therefore, that the parents of deaf children could likewise use pictures at home with advantage in working with their children. However, it should be understood clearly that pictures are a representation or a vicarious experience and not experience per se. Hence, pictures should be employed only as a supplement to the real experience, or after the situation, object, etc. has been experienced. With the preceding in mind the author outlines a number of procedures which can be effectively employed by parents of deaf children in the development of language. Furthermore, the pictures should be large and contain very little detail. Dwelling on picture and single word association is not advocated. Rather, sentences and simple stories should be introduced without too much delay. Activity on the part of the child, or acting out situations in connection with the language and picture, is stressed. "Let him see, feel, hear, and act the words and sentences in order to extend his comprehension as far as possible." *(C.P.G.)*

775. IANDOLI, E. W., WINKLER, P., and BARTON, L., Parent education program (the Albany hospital conservation of hearing center). *Volta Rev.*, 62, 1960, 271-273, 283.

This article is the third part of a series. Parts one and two appeared in the Volta Review for December 1959 and February 1960. This portion of the paper discusses the things that parents need to know to

help train their child's eyes, to carry on sense training, to help them with their voices, to help them to become an integral part of the household, play groups, and communities, and the optimum periods for the development of speech and language. Because of these needs the center started its program by having a training session with the child and enrolling the parents in the John Tracy Correspondence Course, suggesting that they subscribe to the Volta Review and participate in the "Roundabout" for Parents. *(J.B.M.)*

776. JOHNSTON, E. V., and FRISINA, D. R., A study of the need of academic classroom teachers of the deaf. *Volta Rev.*, 62, 1960, 500-503.

This paper is concerned with the needs for teachers of the deaf in public residential schools, public day classes, public day schools, denominational and private residential schools and denominational and private day classes. In summary, 127 academic classroom teachers of the deaf graduated in June of 1959, whereas the total of trained teachers of the deaf needed in the above mentioned schools was 511. The average annual teacher need per school or per class during the past 10 years has been 2.20 teachers. Since 68% of the facilities indicated additional need in the future, it is apparent that means must be developed for recruiting and training a significantly greater number of qualified academic classroom teachers of the deaf. The implications of this are rather evident, and one could expect that the extent and quality of speech and language development in general educational achievement is likely to be less than adequate. In the future approximately 500 new teachers of the deaf will be needed per year. An editor's note includes figures for April, 1960 which show that 233 schools and classes for the deaf responding to inquiries indicated a need of 549 new teachers for the school year beginning in 1960. There were 177 student teachers enrolled in approved training centers in this country during the year 1959-60. This indicates a shortage of at least 372 teachers for this school year. *(J.B.M.)*

777. JONES, G., Further education for the deaf. *Teach. Deaf*, 58, 1960, 403-413.

The question is raised as to the appropriate planning for education of deaf adolescents after they leave schools for the deaf in England. The Crowther Report dealing with recommendations for further education stresses the partnership between industry and education. County colleges or community centers should be established to help young deaf workers adjust to the working world and to provide additional opportunities to make up deficiencies in formal education. Evening classes for adults conducted in Liverpool have successfully offered courses in basic English, speech correction, speech development, classes for parents of deaf children, and craft classes. *(M.S.K.)*

778. KOMAROVA, E. N., Iz opyta raboty po oznakomleniyu glukhonemykh uchashchikhsya s izobrazitel'nym iskusstvom. (Introducing art to deaf pupils.) *Spetsial'naya Shkola.*, 95, 1960, 34-39.

Soviet schools aim at all-round development and to understand the beauty of art is an essential part of a Communist upbringing. Deaf mutes, not being affected by words, are particularly susceptible to the emotional effect of works of art and can, too, acquire new ideas about their people and those of other lands by this means. Pupils of the 5th to 7th classes are introduced to the work of 19th century Russian painters in the following ways: (a) reproductions are used as illustrative material in reading lessons, (b) descriptions of historical and legendary landscapes and portraits are given in speech development classes, (c) a visit, preceded by a preparatory talk, was made to an art gallery where the teacher pointed out colors, subjects and painters of individual pictures and answered questions, usually about the meaning of the pictures. The pupils expressed pleasure at seeing a painting, known from a reproduction, and even tried to copy what they liked best. In class next day they shared their impressions, based on notes they had taken, and their likes proved very different. Further visits were followed by discussions and quizzes. *(H.G.W.)*

779. MAGNER, M. E., Parents can help deaf children acquire ability in speechreading. *Amer. Ann. Deaf*, 105, 1960, 431-433.

The longer a child must wait to acquire speechreading skills after deafness has been

diagnosed, the more difficult it is for him to become proficient in the art. The ideal time to begin speechreading is before the age of two, and hence is home-centered. Although the child who is severely deaf must eventually attend a school for the deaf in order to receive special help in language, speech, school subjects etc., nevertheless, it is the parents in the home setting who constitute the best teachers for beginning speechreading activities. Parents should be cognizant of the three stages of development of speechreading as noted by the Ewings in order to further enhance their effectiveness as teachers of their children. The role of the family in helping the deaf child acquire a mastery of speechreading is not limited to the infant and preschool years, but is a continuous, lifetime process. It is only through the concerted efforts of all concerned that the deaf child will become more proficient in speechreading than has hitherto been achieved. *(C.P.G.)*

780. MANCHESTER, U. OF., Certificate for teachers of the deaf—examination papers. *Teach. Deaf,* 58, 1960, 357-364.

Examination questions for certificate for teachers of deaf children granted by the University of Manchester held June 11-22, 1960, cover Psychology of Education, Speech, Audiology and Health Education, Curriculum and Method, History of Education, Comparative Education of the Deaf, Physical Audiology and the Measurement of Hearing, Psychology and Educational Treatment of Deafness, Anatomy and Physiology of Hearing and Speech, including Pathology of Deafness. *(M.S.K.)*

781. MOROZOVA, N. G., and LUBOVSKY, V. I. (Eds.), Tezisy Dokladov, tret'ei nauchnoi sessii po voprosam defektologii, 22-25 Marta 1960 g.; izdatel'stvo Akademii Pedagogicheskikh Nauk RSFSR, Mockba, Pogodinskaya ul., 8. (Text of reports, third scientific session on questions of defectology, 22-25 March, 1960, Academy of Pedagogical Science RSFSR, Moscow, Pogodinskaya 8.)

A subsection of the reports contains four papers on the preschool education of deaf children. N. G. Butkevich ("Instruction of children of preschool age in typewriting as one of the means of their forming connected speech") believes typewriting is one of the ways which favor the development of the ability to express thoughts connectedly. The first stage of his investigation was to teach the children the technique of typewriting. For children who had mastered the hand alphabet typing proved to be possible even at the age of five. Children of 6 years in the senior group in the third year of instruction already typed single letters to dictation by the hand alphabet and words to dictation "from objects' in the first 15 minute lesson (typing with two fingers and observing spacing and fresh lines). During this time they also mastered the appropriate terminology which was being used in setting up and carrying out the exercise. By the sixth lesson the children typed sentences consisting of 2-3 words from a familiar picture without a mistake, using full stops and capital letters for proper nouns and after full stops. At the same time their speed in typing increased from 40-50 strokes in 15 minutes in the first lesson to 75-85 strokes. By the eighth lesson most of the children in the group, and by the tenth all of them, had brought the technique of typing to an average speed of 110-125 strokes in 15 minutes, and by the 15th lesson up to 180 strokes. This experiment showed that children can easily and quickly master the technique of typewriting, a fact which opens up great possibilities in teaching written, connected expression to children of preschool age.

G. L. Vygodskaya ("On the creative games of deaf children of preschool age") states that the significance of creative games in the development, instruction and education of deaf children of preschool age has not been sufficiently considered until very recently. Yet creative games are even more important in the development of deaf children than for those who can hear. The game plays a very important part in acquainting them with the life around them and in the development of their speech and powers of expression. Observations of deaf children reveal that their games resemble those of hearing children in that they reflect the activities of grown people and their relations to each other. Their games also show some peculiarities. In the first stages of development of their play activities, they reproduce the concrete actions of the grown-ups around them. Their attention to detail and the concreteness of their

actions is remarkable. Such punctiliousness is sometimes detrimental to the representation of what is basic and essential in the activities of the grown-ups represented and is particularly apparent in the younger children. There is a tendency to a mechanical repetition from time to time of one and the same actions, and sometimes to a simple repetition of previous games on the same subject. With a young child, sometimes his entire game is based on mere imitation of the actions of another child. It is characteristic of deaf children that from the first days of being included in a game with a subject, they obey its rules implicitly. Thus, by means of a game with a subject you can easily get deaf children of preschool age to carry out any request within their powers. Their play activities undergo considerable changes in the course of their general and oral development: (a) the subjects of their games become more complicated; (b) situations in life and the relationships they contain are expressed more deeply in them; (c) the games acquire a collective character; (d) the children employ objects more and more frequently in the games; and (e) there is more and more spoken contact among the children taking part in them. A characteristic peculiarity is the transfer of actions usually performed with one lot of objects to others, which are used in real life in a different way. This transfer is carried out by normal children in quite a different way from deaf ones, a fact which is apparently connected with the retarded development of their speech. If normal children from about the middle of preschool age easily replace real objects with "conventional" ones, then deaf children of preschool age experience certain difficulties with such replacement, and it becomes possible only by definitely organizing their play activities and gradually bringing them to a "conventional" use of the object in the game. The peculiarities in their play activities may be partly explained by the retarded development of their speech and the very limited possibilities of intercourse resulting from it. Because of this underdevelopment in speech, imagination which is needed for the development of play activities also falls behind in its development. Although a child uses visual images in the process of expression, yet for this a certain standard in abstraction and generalization is needed which can be attained by a definite standard in the development of speech. The limitations in the speech development of a deaf child prevent his being drawn away from immediately perceptable reality and make the creation of an imaginary play situation more difficult. The guidance of teachers in the game has great importance in its development and in raising it to a higher level. Without special guidance and instruction the games of deaf children develop slowly and remain for a long time at the level of "processes to do with the object." The basic methods of guidance in the games of deaf children in this investigation followed the line of widening the children's experience, introducing new subjects for play in which new forms of people's activities and their mutual relationships were expressed, enlisting the children's personal experience of life, giving them help in the distribution of parts in the first stages of development of play activities, taking part in the children's games as one of the performers, etc. Because of their emotionalism, inner motivation and favorable conditions for mutual intercourse, creative games may be successfully employed both to acquire a vocabulary which will sharpen the children's ideas and also to develop the need for speech.

B. D. Korsinskaya ("On methods of teaching speech to deaf children of preschool age") states that teaching speech is only effective and begins to approximate the development of this process in those who hear, when the child acquires the ability to grasp the word articulately and to reproduce it from memory. The whole period before mastering this ability must be considered as a preparatory one to ensure correct speech development. The basic problem of this preparatory period is not so much the mere accumulation of a vocabulary as the mastery by the children of the habits of perception and independent reproduction of a word. Special lessons to sharpen the child's ideas and elementary notions and exercises to widen and deepen the meaning of words will serve as a means of compensation for the retarded speech development and restricted, compared with those who hear, speech intercourse of the deaf child. They shorten the path which leads children to generalization. During the lessons, the teacher guides the process of

perception of all the children, helps them to pick out what is essential, to compare, to contrast the world of objects and phenomena under observation, strengthening by words the generalization arrived at in this way. Special exercises with a word strengthen the knowledge acquired, speed up the memorizing of it, and favor its being included in speech and in intercourse, where in the process of being used, the meaning of the word is still further widened and deepened. Just like the understanding of a connected text, so the ability to express one's thoughts in consecutive and connected order is very important in intercourse with those around one. Experience shows that the use of a written form of expression, very important in itself, facilitates the development of connected speech. At the same time teaching the technique of writing to children of 5-6 years does not ensure the the children will develop an independent written expression. Within the limits of the nursery school the teaching of writing cannot go beyond the ability of the children to write single letters, words, and in individual cases, with the best teachers, short sentences, with a great many mistakes in calligraphy as well. Thus, the teaching of connected expression in written form is not practically possible. Typewriting may be successfully used to develop this ability in children who have mastered each letter individually. Mastery of typing by the children enables them to form the ability of connected expression in printed form. The development of this ability because of its very function represents a development in written speech and both facilitates and improves the habit of connected expression in dactylic and oral form.

N. A. Moreva ("The teaching of the finger alphabet [dactylic speech]") states that the employment of dactylic speech is an essential condition for the formation in children of oral speech in direct intercourse. The success of the children's mastery of oral speech depends on their mastery of the technique of dactylology and the development of a memory for words. The problem of investigation was to discover the best conditions for acquiring these abilities. Pedagogic and laboratory experiments which were carried out revealed the following: (a) Children of from 3 to 3½ years of age master dactylology in a period of from 30-40 days. (b) Special exercises in learning the dactylic signs and their correlation with the letters of the alphabet will shorten this process, as compared with mastering the signs only by direct intercourse. Children cannot, on their own, master the signs by dactylic representations. Teaching children the correlation between dactylic signs and their representations occupies nearly as much time as teaching the correlation between the dactylic signs and the letters of the alphabet. At the same time an early analytical reading of the printed word is assured by this method. (c) The use of the complete written form of the word together with its dactylic pronunciation facilitates both the distinguishing of the words as well as their independent reproduction. *(H.G.W.)*

782. NATIONAL COLLEGE OF TEACHERS OF THE DEAF, Examination for the diploma. *Teach. Deaf*, 58, 1960, 169-174.

Examination questions for the diploma of the National College of Teachers of the Deaf, Manchester University, held March 1960, are listed covering Principles of Education; History of the Education of the Deaf; Theory of Speech Teaching; Anatomy, Physiology and Medical Aspects of Deafness; Language. *(M.S.K.)*

783. NATIONAL INSTITUTE OF THE DEAF, Conference on the care of the deaf. *Teach. Deaf*, 58, 1960, 388-390.

A conference on the care of the deaf in England was convened by the National Institute of the Deaf, Oct. 5-7, 1960, to review the present status of work for the deaf, advances in teaching techniques, and developments in research and administration. A resolution was adopted to set up a working party "to ascertain what each Local Authority throughout the United Kingdom is now doing and to provide preschool auditory training and guidance to parents, and to diagnose deafness in new-born infants." Four areas needing further study are (a) psychological effects of severe deafness, (b) causes of isolation and segregation of the deaf after leaving school, (c) a study of other means of response in communication than speech, and (d) research into speech training for the young deaf child. Other papers included "Early Ascertain-

ment of Deafness in Children" and "Pre-School Guidance." *(M.S.K.)*

784. OSTERN, B., Home help with reading. *Volta Rev.*, 62, 1960, 494-496.

This paper is written to help parents interest their deaf children in reading and to encourage reading in the home environment. It discusses why deaf children have a great deal of difficulty in learning to read. Ways in which parents can assist their children in becoming more interested in reading and in becoming better readers are presented. Expansion of vocabulary and exposure to natural language patterns are important, and parents can develop a good attitude toward reading by setting an example within the home environment. Miss Ostern makes suggestions for creating interest in reading at the preschool, primary, intermediate, and advanced grade levels. *(J.B.M.)*

785. PHILLIPS, F. I., Graduate teacher training for deaf students. *Amer. Ann. Deaf*, 105, 1960, 424.

The graduate program for deaf students of Gallaudet College who contemplate teaching careers is now similar to that of hearing trainees. In subjects such as the teaching of speech, lip reading and in auditory training, adequate substitutions will be made to complete the requirements for certification as established by the Conference of Executives of American Schools for the Deaf. Furthermore, an undergraduate program for prospective teachers among the deaf students at Gallaudet College has been inaugurated and includes courses in English, Mathematics, Chemistry, Physics, Biology, History and Political Science. *(C.P.G.)*

786. POITRAS, B., The case for the deaf child in the regular school. *Volta Rev.*, 63, 1961, 16-17, 43.

This paper written by a profoundly deaf young lady states that many children who are now enrolled in schools for the deaf could be enrolled in regular schools. She feels that many of the problems might be alleviated if the children were confronted with the social and educational situations from the time they entered school and that they would soon learn to cope with the problems of the everyday world. She feels that the grasping of abstractions would be easier if many of these deaf children were in schools for those with normal hearing. She comments that not all children can be helped in this way, but that more could be than are realized at the present time. *(J.B.M.)*

787. PRATT, G. T., Presidential address. *Volta Rev.*, 62, 1960, 301.

States purpose of the Alexander Graham Bell Association for the Deaf and indicates progress made in teaching deaf children through speech and lipreading. Quotes statistics of children now enrolled in special schools and classes, and the numbers being taught by oral, nonoral, combined and simultaneous methods. Cites resolution adopted at Eleventh Quadrennial Convention in 1886. Urges that the deaf child be kept in focus during deliberations of this meeting, and that an honest assessment of present shortcomings and appraisal of possible progress be made. Believes a metamorphosis in the education of deaf children would take place if 25% improvement in their speech were achieved. Favors a future summer meeting devoted exclusively to speech. *(J.B.M.)*

788. ROSENSTEIN, J., Panel discussion. *Volta Rev.*, 62, 1960, 306-308.

There are no research investigations which relate the determinants of motivation to the teaching of speech to deaf children, and the psychological literature on what governs motivation yields inconclusive or controversial results. Teachers of deaf children should make more use of positive-valued reinforcements in requiring that conscious control of attention so necessary for lipreading and speech-teaching. Non-directive approaches and other comments by Dr. Raph may apply to speech-handicapped children; but such approaches cannot hope to replace that function which deaf children must arduously acquire: the capacity for language, visually received and orally expressed. *(J.B.M.)*

789. RUDLOFF, J. S., Recruiting teachers for the deaf. *Volta Rev.*, 62, 1960, 541-542, 564.

Questionnaires were sent out to 130 teachers of the deaf in California. Seventy-six percent of the forms were completed and returned. Fifty-six percent of the teachers were recruited through the efforts of

the local supervisor of special education, superintendents of schools for the deaf, and teachers for the deaf. Thirty-three percent reported that a contact with a deaf individual was their principal reason for being attracted to teaching the deaf. It is also pointed out that, although there is merit in group tours through school programs for the deaf, more individual attention to the visitor and assured opportunities for private conversation have been increasing the effectiveness of this recruiting technique. Many of the teachers have come from the field of regular education and have been interested in this special field. Curriculum planning and attention to the needs of present teachers will help in the recruitment of new teachers. *(J.B.M.)*

790. SCOUTEN, E. L., Meeting the problems of literalness in deaf students. *Amer. Ann. Deaf*, 105, 1960, 425-426.

Literalness in college preparatory deaf students is attributable in a large measure to single definition word meanings which is a carryover from methods used during the primary school years. The author emphasizes the necessity for inculcating in deaf students the idea that words have many meanings. It is through an expanding vocabulary that ability to handle abstractions and mental flexibility are enhanced. A technique for developing vocabulary is given. *(C.P.G.)*

791. SINCLAIR, M., Interesting the disinterested reader. *Volta Rev.*, 62, 1960, 488-492.

This paper is concerned with the congenitally deaf child's difficulty in learning to read. These children are usually low in understanding of vocabulary, have very little language ability, and lack aims or ambition. The author suggests that the teachers get the children's cooperation so they will work to capacity. The teacher should choose a textbook containing interesting stories with colorful, yet simple, vocabulary. She should use a variety of work attack skills to develop the vocabulary for the story before it is assigned. She should have children read the assignment using their workbooks for references. Wordbooks are made containing definitions of the new vocabulary that they have learned. The teacher should then have questions on the board which summarize the story, and in the initial stages she should help the children answer the questions. Later, these can be assigned for homework. Having taught new vocabulary, there should be a review of this vocabulary and the story from time to time. By means of teacher-made worksheets or workbooks this can be accomplished. As the final step, the teacher must keep in mind at all times that these children who are profoundly deaf from birth need more help than the average child. *(J.B.M.)*

792. WALL, E. R., The peripatetic service for children with defective hearing in Lancashire. *Teach. Deaf*, 58, 1960, 394-399.

In addition to partially deaf units and hearing clinics, peripatetic services are available to children with defective hearing in Lancashire, England. The three aspects of this service are screening, assessment, and educational assistance. Screening is carried on by assistants to the county medical officer who administer pure-tone "sweep" tests to all eight-year-old children in all schools, as well as other children referred by the school staff. Assessment is made by an audiologist and local medical officer on children who fail to pass the screening test. In addition to complete pure-tone audiometry, voice tests are used. Information relating to acoustic conditions in the school, academic progress, and parental attitudes is obtained on each child to assist in adjustment. Educational assistance may take several forms: favorable class position closer to the teacher and in a good light for lipreading, training in lipreading and/or auditory training, speech improvement, guidance to the teacher and parents, and in some cases placement in a school for the deaf. *(M.S.K.)*

793. WALTER, J., A century of education of the deaf in Australia. *Amer. Ann. Deaf*, 105, 1960, 430.

This article briefly describes the establishment of schools for the deaf in Australia. *(C.P.G.)*

794. WILLIAMS, H. G., Nippon Rowa Gakko, a school in Japan. *Silent World*, 14, 1960, 288-289.

Nippon Rowa Gakko, the first oral school for the deaf in Japan, was founded in 1920

by Dr. and Mrs. Reischauer, American missionaries. The present enrollment is 174. There are 35 teachers. The age range is 4 to 18. Instruction is oral and the program includes vocational training as well as academic instruction. *(H.F.S.)*

795. WOODWARD, H., Read with your children. *Volta Rev.*, 62, 1960, 517-519.

This article is a guide for parents in the choice of books for out-of-school reading. It suggests ways in which to read stories to children and a list of books, including author, title, and publisher, for children at different age levels. *(J.B.M.)*

ETIOLOGY AND PATHOLOGY

796. ANON., Rubella and congenital defects. *Brit. Med. J.*, 1960, 5204, 1005.

A British Ministry of Health report of 1960 by Mason, Logan and Loy, summarized 578 cases of rubella in England, Scotland and Wales from 1950-7. Although rubella after the 16th week of pregnancy did not affect the foetus, rubella in the first 12 weeks of pregnancy resulted in increased chances of abortion, stillbirth, and death before two years of age. Comparable incidence figures of defects in the rubella series, with 5717 controls in parentheses, are: congenital heart disease 4.7 (0.2%), cataract 4.7 (0.04%), deafness 3.0 (0.08%), suspected deafness 3.6 (0.04%), mental deficiency 1.8 (0.4%). Of 202 cases of maternal rubella in the first 12 weeks of pregnancy, 19% of the children surviving at 3-5 years of age showed impaired hearing, seldom to a severe degree. *(J.C.S.)*

797. BARNA, V., ŞEPTELICI-ARON, E., CSERVENY, A., TOMOŞOIU, L., and BUCHWALD, I., Consideraţii asupra otitei stafilococice la sugari. (Considerations on staphylococcal otitis in sucklings.) *Oto-Rino-Laringol.*, 5, 1960, 277-283.

In view of the high incidence rate of otitis in sucklings (13.4% in 1957 and 10.3% in 1958), the authors have carried out clinical and bacteriological investigations in 57 cases of otitis media. The results disclosed the prevalence of a primary staphylococcal aetiology (61.4%) as well as the frequent occurrence of super-infection with a microbial flora formed of *b. coli*, *b. proteus*, and *b. pyocyaneus*, the latter determining a trailing course of the affection. The clinical course of otitis media in sucklings does not depend exclusively upon the microbial agent, but also upon the state of reactivity of the macro-organism, in close relationship with environmental factors and with the adaptation of therapeutic steps to the individual case. *(Authors' summary)*

798. BOLOGNESI, C., La funzione vestibolare nella malattia di Ménière. (Vestibular function tests in the Ménière syndrome.) *L'Oto-Rino-Laringol. Ital.*, 29, 1960, 283-293.

Both the pathogenesis and the symptomathology of Ménière's disease (endolymphatic hydrops) are briefly discussed and the importance to its diagnosis of the audiometric exam.—with its liminal and supraliminal tests—is pointed out. Then, arguments are brought out against the opinion that the vestibular function tests, applied to such peculiar morbid entity, has no real value to the purpose of the diagnosis and localization of the affected side. The physiopathology of the vestibular asymmetries that may appear in the course of Ménière's disease is illustrated and a series of personally observed cases is reported, where out of 114 patients examined employing Fitzgerald and Hallpike's double thermic test, the following results were obtained: 17.5% undamaged vestibular function; 65% unilateral or bilateral—the latter was less frequent—hyporeflexia; 7% unidirectional prevalence of provoked nystagmus; 10.5% latent—mostly total—vestibular asymmetry. The author rather likes to list 10 patients affected with an asymmetry associated with a unidirectional prevalence of the nystagmus among the patients with hyporeflexia, this because, from a semeiological point of view, the whole net difference of the values obtained from one side compared to the opposite side . . . (total asymmetry) is regarded as the first and most important data. *(Author's summary)*

799. CALICETI, G., and BOLOGNESI, C., I tumori metastatici del temporale. (Metastatic tumors of the temporal bone.) *L'Oto-Rino-Laringol. Ital.*, 29, 1960, 102-122.

The clinical observation of a carcinoma of the middle ear, secondary to a gastric

neoplasm, was the starting point for a review of the literature on the metastatic tumors of the temporal bone: the essential data regarding each case are hereby briefly reported. The manifold symptomathology induced by the aforementioned metastasis is outlined according to the following three basic patterns: (a) carcinomatous otomastoiditis with or without suppuration and frequent occurrence of facial n. paralysis; (b) carcinomatous petrositis showing essentially radiological or neuro-radiological signs; (c) carinomatous internal otitis presenting mainly oto-neurological symptoms. *(Authors' summary)*

800. CERONI, T., Reperti otofunzionali nella disostosi multipla. (Dysostosis multiplex from the otofunctional point of view.) *Riv. Oto-Neuro-Oftalmol.*, 35, 1960, 601-620.

After some historical remarks and an introductory chapter about dysostosis multiplex considered under its clinical and anatomo-histopathological aspects, the author reports two cases which he has studied from the otofunctional point of view. In both cases serious changes in the labyrinthine function were observed and the hypothesis is put forth that these changes are directly dependent on a damage of the structures of the VIII cranial nerve induced by the dysmetabolic processes being at the basis of this disease. In order to establish the time of onset, frequency, and the type of lesions of the VIII cranial nerve and their diagnostic significance, closer cooperation between otologists and pediatricians are looked forward to. *(Author's summary)*

801. COSTINESCU, N., IŢICOVICI, M., and MACARIE, Gh., Hipoacuziile profesionale la muncitorii din industria textilă. (Occupational hypacusia in workers from the textile industry.) *Oto-Rino-Laringol.*, 5, 1960, 235-242.

The authors have studied the effects of acoustic trauma in 353 workers from the textile industry; 214 were working at the looms and 139 in the spinning department. After showing, on the basis of analysis of the sound spectrum, the harmful effect of noise in this professional environment and the pathogenic mechanism of alteration of the auditory function, the authors describe the method applied in their clinical and audiometric investigations. A comparative study was carried out on the degree of hypacusia in weavers and spinners, the mean percentage rates of loss of hearing being computed per categories of auditory frequencies, in groups of workers of the same age and the same length of service. Hypacusia was found to be much more accentuated in weavers than in spinners. In the former, diminution of hearing sets in soon and is very advanced after 10 years' service, particularly in subjects over 40 years of age. *(Authors' summary)*

802. DiGEORGE, A. M., OLMSTED, R. W., and ROBISON, D. H., Waardenburg's syndrome. *J. Pediat.*, 57, 1960, 649-669.

In 1950 Waardenburg noted that developmental anomalies of the eyebrows, nose root, and eyelids may occur in association with pigmentary defects of the irides and head hair and with congenital deafness as a genetically determined syndrome. The authors present information from examinations, case histories and clinical observations of probands and family members affected with this disorder. The first reported instances in the Negro race are included. Consideration is given to the potential contribution of the syndrome to the clarification of the pathogenesis of certain types of congenital deafness. This syndrome is reported to consist of (1) lateral displacement of the medial canthi of the eyes and of the lacrimal puncta (2) a hyperplastic, broad nasal root (3) hyperplasia of the medial portions of the eyebrows (4) partial or total heterochromia iridum or isochromic, hypoplastic blue irides (5) congenital deafness or varying degrees of partial deafness (6) white or gray forelock. The syndrome is genetically determined and transmitted in an autosomal dominant manner with varying degrees of penetrance of the individual characteristics. Possible additional characteristics of the syndrome are premature graying of the hair, abnormal pigmentation of the skin, pigmentary changes of the fundi, characteristic facial appearance. It has been roughly estimated that 2.0 percent of congenital deafness in the United States may result from this disorder. *(N.J.C.)*

803. ELDREDGE, D. H., Clinical implications of recent research on the inner ear. *Laryngoscope*, 70, 1960, 373-381.

Histopathologic and electrophysiologic studies on the guinea pig cochlea exposed to noise at various intensities and durations yield clues toward evaluating causal relations in compensation claims for occupational hearing loss. Exposures from a few minutes to an eight-hour work day to noises not exceeding 95 db per octave band in the range 300 cps to 2400 cps almost certainly could produce no permanent threshold shift. Exposures of similar duration but to average octave band levels exceeding 135 db could possibly, but does not commonly, produce permanent threshold shifts. It is unlikely that brief exposure to noise in the range from 95 db to 135 db will produce permanent hearing impairment. Steady occupational exposure to the same noises during an eight-hour work day can produce permanent threshold shifts which vary with the individual but which are related to the duration and level of exposure. *(R.G.)*

804. FELDMAN, A. S., An investigation of secondary nerve degeneration in clinical otosclerosis. *A.M.A. Arch. Otolaryngol.*, 72, 1960, 425-430.

The author was interested in determining whether secondary nerve degeneration was typical of the otosclerotic process or could be attributed to the normal neural deterioration known to be an accompaniment of the aging process. He studied 122 patients who had a diagnosis of bilateral otosclerosis but had not undergone surgical intervention. They were divided into six subgroups with a history of hearing loss ranging from (a) 0 to 5 years, (b) 6 to 10 years, (c) 11 to 15 years, (d) 16 to 20 years, (e) 21 to 25 years, and (f) 26 years or longer. The number of subjects in each subgroup varied from 14 to 35. The mean ages of the subgroups varied from 29.13 to 50.64 years. Statistical analysis was based upon the number of ears (244) rather than the number of individuals (122). The data from the subjects were utilized to determine the relationship between duration of noticeable hearing loss and degree of auditory nerve involvement. Analysis was in terms of a comparison of variance between subgroup mean spondee loss, bone conduction thresholds at the frequencies 250, 500, 1000, 2000 and 4000 cps, and discrimination scores obtained with the W-22 word lists. In addition, uncorrelated t tests were applied in those instances where a significant F was obtained. Comparison of means by the t score was based on a comparison of the group with five years' duration vs. subsequent groups. An analysis of spondaic speech losses revealed a significant increase in hearing loss at all but the 6 to 10 year duration when compared with the first five-year period. For bone conduction thresholds at 250, 500, and 1000 cps there were no significant differences between subgroups. There was a significant difference in hearing loss by bone conduction at 2000 cps. The factor of significance was found to be duration (Subgroup e). All others showed no significant differences. This significance between duration groups disappeared when the individual losses were adjusted for anticipated presbycusis. Significant differences were also observed between the subgroups for 4000 cps, but this significance dropped from 0.01 to 0.05 when anticipated presbycusis was considered, and the major remaining factor of significance was found to be due to a significantly *less* rather than greater hearing loss within Subgroup d. The study permits certain tentative conclusions. Secondary nerve degeneration as a function of increased duration of hearing loss from otosclerosis could not be inferred from the obtained data. When presbycusis adjustments are employed, the remaining differences of significance between duration subgroups appear to be sampling artifacts. There is no consistently significant increase in hearing loss by bone conduction or speech discrimination. This is not true for air conduction where significant increases in hearing loss are observed with a duration increase. *(J.J.)*

805. FISHMAN, J., FRASER, F. C., WATANABE, M., SODHI, H. S., and BECK, J. C., Familial nerve deafness and goitre. *Canad. med. Assn J.*, 83, 1960, 889-892.

We have described a family in which four (one male and three females) of seven siblings are affected with bilateral nerve deafness and goitre. This family closely resembles others which have been reported

previously with this syndrome. The condition is characterized by bilateral nerve deafness, probably present from birth, associated with a variable degree of mutism, and by goitre which appears in childhood or adolescence. The affected individuals are euthyroid and of normal intelligence, and the familial distribution is compatible with a simple Mendelian recessive inheritance. In this condition there is probably a partial defect in organic binding of iodine in the thyroid gland, and compensatory goitre results from increased secretion of thyrotrophin. *(Authors' summary)*

806. GOLDING-WOOD, P. H., Ménière's disease and its pathological mechanism. *J. Laryngol. Otol.*, 74, 1960, 803-828.

The features observed in a personal series of 314 followed-up cases of Ménière's disease are recorded. Successes in treatment suggest that labyrinthine vasospasm has been relieved. The histology of Ménière's disease is reviewed. It is concluded that only labyrinthine vasospasm can account for the clinical features and production of the characteristic endolymphatic hydrops. The pathological mechanism that is visualized is given in detail, evidence being offered to sustain each point. *(Author's summary)*

807. GUIDETTI, B., and MOSCATELLI, G., Le allucinazioni uditive nei tumori endocranici: criteri diagnostici differenziali e loro valore localizzatorio. (Hearing hallucinations on endo-cranial tumors: differential diagnostic criteria and importance of its location.) *L'Oto-Rino-Laringol. Ital.*, 29 1960, 314-323.

The authors report in short the differential diagnostic criteria which permit to distinguish the hearing hallucinations from other not hallucinatory manifestations in patients having endo-cranial tumors and they discuss their value with reference to the position; they then introduce 11 cases of acoustic hallucinations which have been found on a total of over 1000 endo-cranial tumors which have been operated, stressing the fact that in all the cases the neoplasia was situated in the temporal lobe or in the immediate neighborhood of Heschl area. *(Authors' summary)*

808. HEERMANN, J., Über den Wert der Hörprüfung während der Ohroperation und den Einflub der Lokalanaesthesie auf das innere Ohr. (On a valuable hearing examination during ear surgery and the influence of local anesthesia on the inner ear.) *Z. Laryngol. Rhinol. Otol.*, 39, 1960, 818-820.

Local anesthetics (novocain and suprarenin) used in ear operations may diffuse through the round window membrane to the cochlea, resulting in total deafness. This is completely reversible and normal hearing returns in two days. A similar effect on the vestibular apparatus was not observed. Hearing losses of various degrees are common when local anesthetic is used. Hearing tests during operations are therefore only of value when positive increases are recorded. A negative result is not by itself an indication for extending the operation (e.g., to fenestration of the semicircular canal). *(Author's summary)*

809. KODMAN, F., CULL, O. A., and LAWSON, T. O., Reversible sensorineural deafness. *Laryngoscope*, 70, 1960, 1273-1283.

This is a discussion of a patient who incurred a severe bilateral sensory-neural hearing loss because of carbon monoxide poisoning or salicylate poisoning or both. Spontaneous recovery to nearly normal hearing levels took place over a period of 14 months. *(R.G.)*

810. LAWRENCE, M., Some physiological correlates of noise-induced hearing loss. *Industr. Med. Surg.*, 29, 1960, 445-452.

The author investigates some of the unsolved problems which exist concerning the relationship between intense noise and hearing impairment. Animal experimentation is presented to clarify these particular relationships. It has been determined in previous experimentation that the locus of damage caused by intense noise is in the organ of Corti. Temporary threshold shift (TTS) is not as closely related to noise-induced hearing loss as was once thought. TTS does not necessarily reflect the condition of the organ of Corti alone, but may reflect changes along the neural pathways at higher neurological levels than the end organ. TTS, therefore, is never a pure measurement of changes within the end organ itself. Pure-tone audiometry used to measure temporary threshold shift following exposure to noise is thus an inadequate

predictor of possible noise damage. Experimentation employing the technique of recording cochlear microphonics as well as the action potentials of the nerve is used to determine the contribution of each portion of the guinea pig auditory system to the TTS. Histologic examination of the animal temporal bones reveal possible rupture of Reissner's membrane where severe organ of Corti damage is evident. In an animal with minimal end-organ damage, Reissner's membrane is intact. It is suggested than an intact Reissner's membrane is necessary for recovery of the organ of Corti following intense noise stimulation. Further experimentation is presented to demonstrate that injury may be caused not only by the increasing intensity of a sound but also by increased duration or repetition. The question of whether a given noise will cause permanent auditory damage may depend largely upon individual differences in the ability of the structures of the ear to recover from temporary damage. There is a wide variation in animal ears in the extent of permanent damage by a well-controlled noise. An important determinate of whether permanent hearing loss will result following intense noise stimulation is the physiologic condition of the organ of Corti at the time of exposure. The constant fluctuation in functional level of performance of a normal organ is well known. If insult should occur at the ebb point of physiologic function, it is more apt to cause permanent damage. This is particularly true if the ear is recovering from previous exposure at the same time. The author concludes that audiometric measures of threshold shift, recovery rates, etc., are useful but "they must be interpreted in the light of what is known about the actual physiologic changes in the organ of Corti, the seat of injury." *(P.E.R.)*

811. MATSUI, A. MIZOGAMI, I., and NAITO, R., Application of 0.1% benzol to otitis media. *Otol. Fukuoka, 6,* 1960, 224.

The authors applied 0.1% benzol to 24 cases of acute suppurative otitis media and 25 cases of chronic suppurative otitis media with healing results of 45.8% and 12.0% respectively. The authors assume that the action of benzol on otitis media consisted in repression of exudation through astriction on the affected area and mitigation of inflammation. *(Authors' summary)*

812. MUIRHEAD, J. C., Hearing loss due to gun blast. *J. acoust. Soc. Amer.,* 32, 1960, 885.

It is known that hearing loss due to exposure to gunfire does not appear below 2000 cps. In an effort to explore this phenomenon, a model of the ear canal was constructed from lucite with a pressure gauge in the position of the tympanum. Measurements of the pressure resulting from shock waves show that rather than a single transient pressure, a high-intensity oscillatory load is produced on the tympanum, the frequency of which is a function of the dimensions of the canal. *(B.A.L.)*

813. MÜLLER, E., Wie entsteht die Unterbrechung am langen AmboSSschenkel bei chronischen Mittelohrentzündungen? (Disruption of the ossicles in otitis media.) *Z. Laryngol. Rhinol. Otol.,* 39, 1960, 310-316.

Rarefying osteitis is largely a chronic osteomyelitis which probably only affects those ossicles containing remnants of marrow spaces. Such anatomical conditions are shown to exist only in cases of poor or arrested tissue differentiation. Even here they are commoner more extensive, the earlier the infection attacks the middle ear spaces. Thus the origin of much chronic middle ear suppuration may be traced back into earliest childhood. Under the same conditions the mastoid also fails to pneumatise. For this reason defects of the incus are almost exclusively found in chronic ears with poor pneumatisation, while disruption of the ossicles is a rarity with good pneumatisation. The anatomical basis shows not only this problem, but the whole field of middle ear sepsis, in a new light. It is to be hoped that further study will solve other questions, the answers to which are at present unsatisfactory. *(Author's summary)*

814. NOVOTNÝ, Z., and POSPÍŠIL, A., Vztah převodních poruch sluchu k profesionální nedoslýchavosti z hluku. (The relationship of conduction defects and professional deafness due to noise.) *Cesko. Otolaringol.,* 9, 1960, 339-346.

From a group of 32 cases with impaired conduction in workers from very noisy

workshops, in 10 cases the conduction defect appeared to be the factor enhancing the vulnerability, while in seven cases it appeared to be the protective factor; in 15 cases there was no definite relationship between the conduction defect and the action of noise. From an analysis of these cases the authors conclude that the decisive factor as regards the action of excessive noise on the auditory organs with a conduction defect is the state of impedance or the changing impedance in the course of the disease. Cases with a mildly increased impedance of toughness are more liable to suffer damage from noise than other types of conduction defects. Advanced impedance of toughness acts in a protective manner. The increased impedance of mass also seems to have a protective action. An important factor is also the state of the phase or the interference of acoustic waves. In this way we can explain the findings in patients with adhesive processes and not too advanced otosclerosis who are more liable to suffer damage from noise than patients with other conduction defects. On the other hand, in chronic otitis with suppuration the authors did not find in any instance a marked inclination as regards the effects of excessive noise. *(Authors' summary)*

815. OMBREDANNE, M., et al., Un an de traitement chirurgical des otorrhées chroniques de l'enfant dans le service O.R.L. de l'Hôpital des Enfants-Malades. (One year experience of surgical treatment of chronic otorrhea of children in the ORL department at the Hospital for Sick Children.) *Ann. Oto-Laryngol.*, 77, 1960, 1-2; 5-19.

Sixty-four chronic otorrhea cases were operated after medical treatment had failed. Twenty-one were due to a cholesteratoma. Antro-atticotomy was performed in 40 cases and audition was found to be equal or superior to the preoperative state in 47% of cases. Twelve children were submitted to partial evidement and eight to total evidement. Antro-atticotomy and evidement are the only functional surgical procedures of any effectiveness. *(Courrier, Paris)*

816. ORMEROD, F. C., The pathology of congenital deafness. *J. Laryngol. Otol.*, 74, 1960, 919-950.

Following a brief review of normal embryonic development and an enumeration of developmental defects and degenerate conditions which may cause congenital deafness, seven types of such deafness are reviewed in some detail. The *Michel type* is characterized by "complete lack of development of the internal ear." The *Mondini-Alexander type* shows "development only of a single curved tube representing the cochlea and similar immaturity of the vestibule and canals." In the *Bing-Siebenmann type* the bony labyrinth is well formed but the membranous part and particularly the sense organ is underdeveloped. In the *Scheibe type*, which is the most common, the vestibular mechanism is developed and functioning and malformation is restricted to the membranous cochlea and saccule. The *Siebenmann type* shows changes mainly in the middle ear and is often due to hormone deficiency. *Microtia and atresia of the meatus* is another type. The *maternal toxemia type* includes those cases attributable to toxic disease in the mother during the early months of pregnancy. Nineteen microphotographs are shown. The article concludes with a classified list of references. *(C.L.)*

817. ROBERTS, S. E., Neurovascular dysfunctions of the eighth nerve. *Laryngoscope*, 70, 1960, 426-446.

Many neurovascular dysfunctions of the VIIIth nerve can be attributed to hypometabolism. Susceptibility to these dysfunctions is not limited to aging patients. The most susceptible are obese persons with hypercholesteremia and diastolic hypertension. Recommended therapy includes nutritional control (chiefly reduction of fat intake), use of vitamin B complex, control of hormonal balance, use of vasodilators and anticoagulants, adequate sleep and exercise, and reduction of smoking. Of patients put on this regime, most had subjective improvement, "especially in general health," some had no further functional loss, some showed "objective functional improvement of the VIIIth nerve." But "None was cured." *(R.G.)*

818. SALIS, B., Acufeni ed aura uditiva temporale epilettica in un caso di trombosi traumatica della carotide interna. (Tinnitus and temporal auditive epileptic aura in a case of traumatic thrombosis of internal

carotid artery.) *Bol. Mal. Or. Gola Naso*, 78, 1960, 408-417.

The author reports a case of traumatic thrombosis of internal right carotid artery followed by a temporal auditive epileptic aura and permanent tinnitus of the right ear. He discusses the genesis of tinnitus as a consequence of citohumoral changes due to circulatory capillary disfunction. In the present case the audiometric test appeared normal; on the contrary the electroencephalography and the carotid arteriography determined the diagnosis. In such a case the subjective tinnitus appeared as a sign of compression of the cortical auditive area. *(Author's summary)*

819. SEYMOUR, J. C., The aetiology, pathology and conservative surgical treatment of Ménière's disease. *J. Laryngol. Otol.* 74, 1960, 599-627.

"It is not the purpose of this communication to present yet another theory but merely to examine one proposed forty years ago and to outline some supportive evidence. . . . The theory under consideration is that the underlying aetiology of Ménière's disease is a paroxysmal vasomotor disturbance. . . . The ideal therapy naturally is to prevent the aetiological vasomotor disorder in the simplest way. Failing medical treatment this appears to be the nondestructive operative procedure of sympathectomy." *(Author's summary)*

820. SUEHS, O. W., The abnormally open eustachian tube. *Laryngoscope*, 70, 1960, 1418-1426.

When the Eustachian tube is constantly open, the free passage of air and sound into the middle ear can produce a roaring or blowing sound in the ear, synchronous with the breathing. The patient's own voice usually seems abnormally reverberant to himself in these cases. Audiometry may show a slightly increased hearing level for low frequencies because of the masking effect of the breath noises. Loss of fatty tissue which ordinarily helps to occlude the Eustachian tube is probably the chief cause of the abnormal patency. Increased fat metabolism during pregnancy may be an etiologic factor in many cases. *(R.G.)*

821. TANIEWSKI, J., Sudden deafness. *J. Laryngol. Otol.*, 74, 1960, 838-842.

The author gives a survey of 11 cases of sudden deafness treated in the Oto-laryngological Clinic in Szczecin, Poland. The treatment applied consisted of daily intramuscular injections of vitamin B_{12} (1,000 mcg), altogether 30 injections. In seven patients distinct improvement of hearing has been stated by control examination and traced by audiograms. *(Author's summary)*

822. ŢEŢU, I., PRUSKAUER-APOSTOL, B., and APOSTOL, N., Consideraţii asupra patogeniei vasculare a surdităţilor bruşe instalate. (Considerations on the vascular pathogenesis of sudden deafness.) *Oto-Rino-Laringol.*, 5, 1960, 213-226.

After reviewing the recent literature on the subject, the authors discuss the actiopathogenesis of 33 cases of sudden deafness. Irrespective of the etiological factors, in all these cases a cochlear syndrome was found to exist, as expressed by the sudden onset of total or partial uni- or bilateral deafness, accompanied in most cases by strong auricular noises and more seldom by slight transitory subjective vestibular disturbances. The acoumetric and audiometric patterns were of the perception type, the lesion being probably situated at the level of the cochlea (presence of recruitment); the audiometric curves were not characteristic. The pathogenesis of these cases was definitely vascular in 14 cases, as confirmed by concomitant cerebral vascular accidents and retinal vascular disturbances. The clinical aspect and course of the other 19 cases, in which evidence of the pathogenesis, allowed the authors to conclude, however, that vascular accidents (hemorrhages *per diapedesin*, paralysis of the blood vessels, or obstruction by vascular spasm) were involved in these cases as well. The fact that most of the cases recovered or improved following vascular treatment affords therapeutic evidence of the vascular pathogenesis of these instances of sudden deafness. *(Authors' summary)*

823. THOMPSON, J. D., Two identical cases of congenital meatal atresia. *J. Laryngol. Otol.*, 74, 1960, 988-989.

Two right temporal bones were dissected in each of which a plate of bone was found to occlude the external auditory canal. No history referrable to this condition was known. Removal of the bony plate revealed

absence of a tympanic plate but a normal drum head beyond which middle-ear contents were found to be normal except that the descending portion of the facial nerve in the mastoid process was more superficially placed owing to a shortening of the bony external auditory canal. *(C.L.)*

824. TRUTNEV, V. K., SAKHAROV, P. P., Zadachi i perspektivy radoty Gosudarstvennogo Nauchno-Issledovatel'skogo Instituta Ukha, Gorla i Nosa. (Problems and perspectives of research of the State Scientific-Investigatory Institute of ENT.) *Vest. Oto-Rino-Laringol.*, 1960, 6, 7-13.

In fulfillment of the seven-year program planned by the Academy of Medical Sciences of USSR and of the Ministry of Health in RSFSR, the Scientific-Investigatory Institute of Ear, Nose and Throat emphasizes in its research the following fields: (a) prophylaxis and treatment of chronic tonsilitis, pharyngitis and related diseases; (b) pathogenesis and methods of treatment of suppurative otitis media and its complications; (c) pathogenesis and development of hearing loss. The research is interdisciplinary in its character and involves large-scale cooperation of oto-rhinolaryngologists with biochemists, microbiologists, virologists, pathophysiologists and other scientists. Complex therapies are elaborated combining use of antibodies with variety of methods of surgical intervention in treatment of tonsilitis, suppurative otitis media and other diseases affecting hearing. From various streptococcal cultures the effective methods of mass production of allergin are developed. A special investigation is being made on etiology, prevention and treatment of hearing loss and deafness. On the basis of the newly-established levels of interdisciplinary findings, more far-reaching methods of research are introduced which utilize new achievements in epidemiology, pathophysiology, and biochemistry; modern techniques of electrophysiology and radiology and early, objective diagnostic methods of prevention of loss of hearing and deafness are employed. These new methods are supported by the comparative ontogenetic study of development of auditory organ and its disturbance in different periods of human life beginning with the embryonic stage. Special attention is given to the study of the nature of immunity and immunization, also to streptococcal vaccinoprophylaxy and therapy of tonsilitis.

In 1956 the Institute conducted an experiment for the purpose of finding the effect of prophylaxy on initial and recidivist tonsilitis by spraying mouth, nose and throat with a multivalent streptococcal glycerophormol vaccine which included six main serotypes of hemolytic streptococcus. 7500 children and adults were used in the experiment with analogous control groups in numerous polyclinics. The result showed that, as a rule, the vaccinated patients' morbidity with initial and recidivist tonsilitis was drastically reduced on the average from five to 10 times in comparison with the control groups. During the seven-year plan the perfected preventive method will be applied in still wider scale, in order to achieve its conclusive validation. An important element in the seven-year plan is a large scale investigation into the extent to which modernized mass industrial and mechanized agricultural production affect hearing. The purpose of this research is the development and elaboration of systematic and universal measures for prevention and treatment of the traumatic effects of production on the hearing of the workers. *(B.V.M.)*

825. VOSTEEN, K. H., The histochemistry of the enzymes of oxygen metabolism in the inner ear. *Laryngoscope*, 70, 1960, 351-362.

Since "energy transferred to the nervous system is greater than" can be accounted for by acousto-mechanical energy delivered to the hair cells, "this energy increase is a chemical metabolic process." The locus of concentrations in the cochlea of four enzymes presumably involved in this process are determined by histochemical techniques. The main concentrations of the enzymes, and hence the metabolic sources of the additional energy, are located in the stria vascularis and in the hair cells. Damage to outer hair cells following prolonged acoustic stimulation is caused by exhaustion of enzymes in the region of the cells which then leads to cell dissolution, rather than by mechanical injury. *(R.G.)*

826. WAGEMANN, W., Das otologische Bild der Kohlenoxydvergiftung. (The otological picture of carbon monoxide pois-

oning.) *Z. Laryngol. Rhinol. Otol.*, 39, 1960, 691-702.

Carbon monoxide attacks the ferrous elements of haemoglobin as well as those of the intracellular respiratory enzymes. Anoxia results in the first and a specific block of metabolic activity in the second instance. Morbid anatomical lesions consist of vascular damage and, above all, areas of softening around the iron containing nuclei of the central nervous system. The disseminated lesions result in a variety of clinical pictures. In *acute* carbon monoxide intoxication the cochlear and/or vestibular apparatus are damaged. It is shown that the vestibular disturbances are central in type, rarely with spontaneous nystagmus, and they generally recover. Recovery of the damaged hearing, on the other hand, is much less certain. Audiology shows increasing loss of hearing and surprisingly there is often a dip at 4,000 cps. *Chronic* carbon monoxide poisoning results from prolonged exposure to subtoxic doses, or repeated mild, acute poisoning. Our own observations substantially agree with the large Scandinavian series in the post-war period. With 2% carboxyhaemoglobin numerous toxic symptoms are seen, vertigo being the commonest. Spontaneous nystagmus is extraordinarily rare. Central vestibular signs are generally present with differences in tone, dissociation, abnormal nystagmus manifestations and central positional nystagmus. Most of these recover within two to six months. On the other hand disturbances in hearing after carbon monoxide poisoning persist unchanged for years. The higher frequencies are increasingly affected, the deafness is bilateral and equal. In the absence of recruitment the picture is central to the labyrinth. No abnormal fatigue was found. A dip at 4,000 cps is regarded as exceptional. There is no pathognomonic vestibular or audiologic picture and chronic carbon monoxide intoxication must be diagnosed on probability. *(Author's summary)*

827. ZATOČIL, F., POSPÍŠIL, A., and NOVOTNÝ, Z., Spektrální analýza hluku při posuzování profesionální nedoslýchavosti. (Spectral analysis of noise in the assessment of professional deafness.) *Cesko. Otolaringol.*, 9, 1960, 333-338.

In the present paper the authors describe a procedure for assessing and evaluating professional noise and present the spectral analysis of noise from four noisy working places. On the enclosed audiograms the relationship between the spectral structure of noise and loss of hearing is shown. *(Authors' summary)*

828. ZISLINA, N. N., and NOVILOVA, L. A., Issledovanie elektricheskoi aktivosti mozga pri glukhonemotie. (The study of the electric activity of the brain in deaf-mutism.) *Vest. Oto-Rino-Laringol.*, 22, 1960, 76-83.

The authors investigated the electric activity of the brain in 59 deaf-mutes and 16 children with hearing disorders, aged from nine to 16 years. It was found that the electroencephalogram of deaf-mutes and those with impairment of hearing is similar to that of normal children. The data show the intactness of the basic rhythm of the electrical activity of all cortical regions, including the temporal one. In some cases the observed beta-rhythm, and somewhat less pronounced alpha-rhythm, combined with its rapid fluctuations, are considered by the authors as a result of a residual manifestation of meningitis. The investigation of bio-currents by the method of rhythmic light flashes reveals the capacity of the cerebral cortex of deaf-mute children to assimilate these rhythmic flashes, as it is shown on an encephalogram, which serves as an index of functional intactness of the brain, and of the connection of the cortical end of the auditory organ with other regions of the cerebral cortex. *(B.V.M.)*

Hearing Aids

829. GRAHAM, B. A., Hearing aids: major determinants of their effectiveness. *Hearing News*, 28, 1960, 9-12.

The author points out recent changes in the thinking on hearing aid fittings and evaluations. Where, in the past, the aid has been worn at the ear with the best discrimination, this rule should not always be followed. Modern instruments often increase discrimination ability to a marked degree. The best solution to the problem of hearing-aid evaluation is to test aids on each ear and on both ears before the

final decision is reached. Several cases are presented to illustrate these principles. *(D.A.H.)*

830. HASKINS, H. L., and HARDY, W. G., Clinical studies in stereophonic hearing. *Laryngoscope,* 70, 1960, 1427-1433.

The advantages of stereophonic hearing through binaural hearing aids cannot always be assessed by formal clinical testing, but often only by the patient's own listening experience under conditions in which he needs amplification. Some patients find binaural hearing aids superior to monaural aids even when hearing levels are considerably different in each ear. *(R.G.)*

831. LANGFORD, B., Hearing aid design (Part I). *Hearing Dealer,* 10, 1960, 12-14, 29.

The author sketches the history of the hearing aid industry from the cupped hand to the transistor hearing aid. He defines the primary mission of the hearing aid manufacturer as the designing of an instrument to enhance hearing, not looks. "The degree of sound pressure to overcome a loss is the most valuable information that is required." He states that the two most frustrating problems in design are mechanical and acoustical feedback. He stresses the need for the dealer to become familiar with his products and to be able to interpret the technical data which should be supplied with each of his instruments. He states that the response curve of the hearing aid can be mirrored to the potential wearer's audiogram, but it is best to run a positive test to determine a suitable response curve. *(D.A.H.)*

832. RUSHFORD, G., and LOWELL, E. L., Use of hearing aids by young children. *J. speech hearing Res.,* 3, 1960, 354-360.

This report summarizes a survey of 1515 families of young deaf children concerning their experiences with hearing aids. The information was obtained from a questionnaire mailed to parents who had been enrolled in the Correspondence Course of the John Tracy Clinic. The report describes characteristics of the sample population: age at which hearing loss was discovered, agency or individual determining the degree of loss, use of first and subsequent hearing aids, and areas of satisfaction and dissatisfaction with the hearing aid. Certain factors are considered in relation to the child's subsequent satisfaction and use of the aid. *(Authors' summary)*

LANGUAGE AND COMMUNICATION

833. ANTONIA, SISTER R., Problems and issues in teaching speech. *Volta Rev.* 62, 1960, 308-310.

This paper discusses Dr. Raph's paper on problems and issues in teaching speech. The author suggests that since hearing children spend their years from two to six in play situations, the hearing-handicapped child receives his speech in a similar situation. The adult world outside the child's home must be traumatic; but if these adults are aware of the problem, they can successfully establish and maintain a warm relationship with the child. In conclusion, the paper emphasizes the need for a warm, insightful leader who sees not only the need for the development of speech, but sees the child as a whole child who must have his other needs met also. *(J.B.M.)*

834. BARNHART, E. P., Communication patterns of the deaf. *Silent Worker,* 13(2), 1960, 8-11.

An abstract of a University of Michigan thesis for the School of Social Work, this article appends some paragraphs from the thesis itself and a review by Stahl Butler. Miss Barnhart, a Lutheran missionary in Japan, sent a questionnaire to 120 graduates of schools for the deaf selected by school authorities as being "outstanding" or "representative." Using the same questionnaire, the author also personally interviewed 53 deaf adults in the Detroit area, to reach the following conclusions on communication patterns of the deaf: (a) that no one method of communication was more important than the other; (b) reading and writing showed a tendency to rank high among methods of communication; (c) the better educated a deaf person is, the more apt he is to use all of the methods of communication; (d) the deaf tend to marry the deaf, therefore have a lifelong need for manual communication skills, and the deaf tend to have children with normal hearing, therefore have a lifelong need for oral skills in order to communicate with their

children; (e) the great majority of the deaf do not use hearing aids at all; (f) there seems to be no significant relationship between the age of onset of deafness and the method of communication preferred; (g) distinctions among methods appeared to be statistically significant for the partially deaf group, those under 30 years of age, those working outside the home in paid jobs, and according to type of school attended. *(M.D.G.)*

835. DiCARLO, L. M., Speech and communication for the deaf. *Volta Rev.* 62, 1960, 317-319.

The author has described some of the latest research in audition theory as it relates to individuals with normal hearing. He also has reviewed some of the current literature concerning the learning of speech by the acoustically handicapped. He summarizes by saying that an analysis of research indicates a number of suggested trends which educators may pursue in teaching speech to deaf children. Important points include: (a) Teaching speech to the deaf, even at the preschool level, must be preceded by the development of a sense of communication through verbalization prior to formal instruction. (b) Meticulous insistence on making the deaf child's speech exactingly specific should be questioned. In infancy, hearing children do not always have specific language stimuli presented to them. This principle may be extended to the environment of the deaf, provided that speech is the only means of communication in that environment. (c) Speech development should integrate all aspects of the communication arts. (d) Early informal utilization of amplification becomes imperative, especially at the prelinguistic training level. (e) At the preschool age, development of auditory recognition, auditory memory span, auditory discrimination, auditory synthesis, auditory scanning, and auditory recall are necessary. Proper speech material which provides child interest, child purpose, and child motivation designed to meet emerging situations should be the guiding principle. The teaching of speech cannot be a subject, but a full-time activity from the cradle through the entire educational career. *(J.B.M.)*

836. DOEHRING, D. G., The role of verbal and nonverbal factors in cognitive activity. *Volta Rev.*, 62, 1960, 323-325.

The proposition that verbal language for high level cognitive activity was discussed in the context of Whorf's theory of linguistic relativity and the theory of cortical dominance. Recent studies of cognitive processes in individuals with organic brain damage were described. Results of these studies indicated that an intact left cerebral hemisphere is more important than an intact right cerebral hemisphere for verbal functions, while an intact right hemisphere is more important than an intact left hemisphere for certain complex nonverbal functions. It was hypothesized that children with severe language deficits will not necessarily be deficient in nonverbal cognitive abilities. *(Author's summary)*

837. FRENCH, J. R., Further. . . . *Teach. Deaf*, 58, 1960, 414-416.

A program for further training to improve language ability of deaf adults of Nottingham, England is described. In addition to regular teaching duties, trained teachers of the deaf give courses in language expression, reading comprehension, and speech improvement to groups of six students. *(M.S.K.)*

838. GOETZINGER, C. P., The psychologist sees the problem and issues of teaching speech. *Volta Rev.*, 62, 1960, 310-311.

The psychologist, in reviewing Dr. Raph, points out that the team approach can be a traumatic experience for the child and family if they are taken through the diagnostic procedure too fast. A procedure spread out over a period of time seems to work well for both the child and family. Another point discussed is the need for dependency as well as gradual development of independence. The lack of language and the impact of the hearing loss on the family seems to cause this dependency to last longer than with groups of children with normal hearing. The psychologist can assist in determining whether it is abnormal behavior or not, as well as helping the teacher help the child in overcoming the problem. *(J.B.M.)*

839. MILESKY, S. D., Testing lip reading potential. *Volta Rev.*, 62, 1960, 372-375.

This is a report on a two-year study of over 100 children to determine those hearing-impaired youngsters who have natural qualities conducive to good lip reading ability. A battery of tests determine chronological age, mental age, social maturity, vocabulary level, language level, visual retention level, ability to meet new situations, personal integration, analytic and synthetic abilities. Subtests from the Ontario School Ability Examination (Knox Blocks and Color Patterns), Vineland Social Maturity Scale, Goodenough Draw-A-Man, the coding subtest from the WISC, Benton's Visual Retention Test, and Stanford-Binet or grade achievement levels are used for 7-9 year olds. Similar subtests from the Wechsler are chosen when testing 9-11 year olds. The results are placed on a graph, and a comparison is made with the mental age for each child. "The degree to which each lip reading factor is used to potential capacity, and the relative position it holds with the others, bears on the conclusions to be drawn from the profile." *(J.B.M.)*

840. MORKOVIN, B. V., Teaching the preschool deaf child: a new approach from the U.S.S.R., *J. Rehab.*, 26(6), 1960, 8-11.

Soviet educators have been dissatisfied with the standard oral methods used with preschool deaf children since these methods have failed to provide them with extensive vocabularies. As a result the children have resorted to nonverbal methods of communication. Some experimentation was done with the use of printed words on flash cards which tended to increase the oral vocabulary. The recognized inadequacy of this method led to the introduction of a new method in 1953-54 by Morozova and Korsunskaia under the auspices of the Moscow Institute of Defectology. Experimentation was initiated among several teachers of the deaf in Leningrad and Moscow. Twenty-four experimental groups with 10 to 12 children each were used. The goals for these children were to facilitate language teaching through direct sensory experiences, to accelerate the development of conversational speech and speech reading, and to embellish the children's communicative vocabulary. To achieve these goals finger spelling was added to the oral method of language teaching. In the first year of teaching, when the children were between three and four years of age, they learned to finger spell approximately 400 words of which they could pronounce 150 intelligibly. These results were substantially higher than the total of 90 words required by the Ministry of Education program of which 40 had to be produced intelligibly. In the first year's program global reading was gradually reduced as literal reading was emphasized. Children were able to begin to read and write without formal instruction. In the second year, in which the average age was from four to five years, finger spelling was used only in order to introduce new and/or difficult words. More emphasis was placed on conversational speech. At the end of the second year, the children were able to use 700 words in speech and 1000 to 1300 in speech reading as compared to the 70 and 150 words required by the Ministry of Education program. In the third year of teaching, where the average age was from five to six years, there was rapid vocabulary growth with emphasis on grammatical structure and simple arithmetic processes. At the end of the third year the children were prepared to undertake first grade work in a school for the deaf. This group had a speaking vocabulary of 2000 words and a speech-reading vocabulary of more than 2000 words as compared to the 90, and 250 to 300 words required by the Ministry of Education program. The results of Soviet experiments need to be evaluated systematically in this country. *(M.M.H.)*

841. ROTTER, P., The parents' role in encouraging speech growth. *Volta Rev.*, 63, 1961, 12-15, 46.

This paper discusses the language and speech teaching function of the deaf child's teacher and parents. The teacher undertakes the development of oral language in the deaf child and corrects speech during daily contacts with him; and the parents encourage speech growth in cooperation with the school. Dr. Rotter has outlined briefly what the parent needs to know about the school program. Of special importance are parental understanding of the school's philosophy, of the school's attitude toward parent's participation in oral language instruction, of the methods used by the school, of the terminology used in the program, and of typical speech growth

patterns of both hearing and deaf children. All parents need to know that development of oral language is a relatively slow process which is necessary for adequate preparation for life. The school needs to help the family devise means of showing their approval of the child's speech as well as their love for him. Parents should have an opportunity to discuss their problems and their opinions with the professional staff. Suggestions are given regarding how the parent and teacher may work together and how the parent may help the child develop speech of his own. Consistency and a concern for the patterns of speech growth are important factors that parents should keep in mind while maintaining high standards for their children. *(J.B.M.)*

842. STOKOE, W. C., Jr., The calculus of structure; a manual for college students of English. Gallaudet College, Washington, D.C., 1960, 92 p.

Intended for students who cannot hear speech or for those whose native language is not English, this manual offers an analytical explanation of English language structure. The author's purpose, as stated, is to explain the referential, semantic, and structural meaning of words and language and their relationships and to teach the principles of structure often neglected or obscured by grammarians. Methods for sentence and paragraph analysis are discussed as an aid to skillful writing free from errors. *(Rehab. Lit.)*

843. VORCE, E. R., You, your child, and the language arts. *Amer. Ann. Deaf*, 105, 1960, 437-441.

How much language the deaf child learns and his interest in using it depend largely upon the extent to which language is a vital element in his daily living. Although the process by which language is learned is the same for both the hearing and the deaf, nevertheless, our responsibility in helping the deaf child learn language is vastly different. On the one hand the hearing child acquires language with relatively little awareness of what is taking place and with a minimum of assistance from adults around him. On the other hand the deaf child's acquisition of language will depend critically upon the extent to which the adults in his environment have made him aware of language in all situations. The role of the parents is vital in developing the language of the deaf child. A variety of techniques and procedures are presented to insure language growth. *(C.P.G.)*

844. WOOD, N., Language in personality development. *Volta Rev.*, 62, 1960, 321-322.

The author has outlined very briefly the development of language and of personality, and she discusses the effect of language upon personality. Four points are emphasized: (a) language disorder will influence and qualify personality development in terms of the types of deficits present, the degree to which they exist, and the kinds of habilitative procedures available; (b) not only a child's liabilities, but also his abilities should be considered in habilitative planning; (c) differential evaluation of a child's disorder is not static, and the classification of the problem should not be accepted without periodic reassessment; (d) total aspects of the child and his problem must be evaluated. Individualized planning for his habilitation and future development must be considered. *(J.B.M.)*

MULTIPLE-HANDICAPS

845. BURNS, D. J., and STENQUIST, G. M., The deaf-blind in the United States —their care, education, and guidance. *Rehab. Lit.*, 21, 1960, 334-344.

There are 372 deaf-blind children under the age of 20 of whom 87 are in deaf-blind departments of schools. Over 20 years of age there are between 3,300 and 3,400 deaf-blind. Available services and organizations devoted to this group are listed and described. A questionnaire study of the eight schools for the deaf-blind shows that a majority of the pupils are "deaf and partially blind" and that the principal methods of instruction are vibration (Tadoma), Braille, and large print. Other methods of instruction and content of curricula are described. Current views of evaluation, research, and rehabilitation are discussed. 51 references. *(J.D.S.)*

846. MESCHERIAKOV, A. I., Nekotoryie problemy obrazu v sviazi s osobennostiami formirovania psikhiky slepoglukhonemogo rebionka. (Some problems of image and development of mentality in a

deaf-mute-blind child.) *Voprosy psikhol.*, 1960, 110-120.

An uneducated deaf-mute-blind child is completely deprived of human mentality. The first step in the formation of mentality should be the creation of the images of objects surrounding the child. The orienting-investigating activity whose products are the images of objects appears as part of human activity for the satisfaction of elementary requirements of man. Further, the orienting activity loses its "business" nature and plays an independent role in the process of formation of object images. As a result of repeated manipulations with the objects, a signal perception develops, i.e., the total image of an object is actualized from a single feature perceived. The signals of an object image are distinguished by broad variances. The variance of signals is at the root of perception constancy. The independence of image from the type of reception, through which the image has been formed, is only relative. This relativity depends upon the nature of leading reception. *(Author's summary)*

847. PAULINE, SISTER M., The multiple-handicapped deaf child. *Volta Rev.*, 62, 1960, 350-355.

The author discusses two types of multiple handicapped children. First, the deaf child with brain damage but with no observable physical handicap; i.e., the brain injury may be severe and widespread and yet show no motor involvement. She states that many of the contributing causes for brain injury are also causes for deafness. It seems possible that some of our "problem" deaf children may also be brain injured and require an understanding of special techniques. She says that brain damage affects in different ways; how one perceives, how one controls one's behavior and impulses, and how long one can attend to a task. The brain-injured child may also perseverate. (Perseveration is an observable symptom.) The paper suggests that the teacher use approaches which crystallize and experience which eliminates distractions. Use controlled situations which emphasize only the key item. The second portion of the paper deals with the deaf child with cerebral palsy who is ambulatory. Cerebral palsy is usually accompanied by some motor involvement. The big muscle development precedes small muscle coordination. A child who has many involuntary movements will probably have difficulty in holding a position long enough to produce the fine skill needed for sound production of consonants. The cerebral-palsy child may be delayed in his ability to bite, chew, swallow, laugh, and cry, therefore having very little practice in the use of the speech organs. He will need physical help and should be checked on producing the following: smiling, puckering, depression angle of mouth, jaw elevation and depression, condition of teeth, position of head, breathing rate, and tongue control. A cerebral-palsy child needs more training as he has missed many of the satisfactions concommitant with acquisition of physical process. The methods should include emphasis on (a) voice, usage and production, (b) breath control, (c) comprehension, (d) structured exercises and manipulation of tongue and lips. The child will need success in speech activities arranged so that he can maintain an interested attitude. Because carry-over will be a definite problem to him, he will need to be taught in life situations and will need the support of all who enter his life—not just the teacher. *(J.B.M.)*

848. PRICE, C. T., Looking ahead. *Silent World*, 14, 1960, 276-278.

The author, crippled by polio and being deaf, relates his experiences with regard to his multiple handicap. His account deals with his mother giving him the fundamentals of an education, his interest in sports and his efforts at physical exercise, his brief formal education, occupational and speech therapy received, vocational training in accountancy and current candidacy for a Fellowship in accountancy. *(H.F.S.)*

849. ROOT, F. K., and RILEY, B. G., Study of deaf-blind children; a developmental plan. *New Outlook Blind*, 54(6), 1960, 206-210.

The author, co-ordinator of the Center for the Development of Blind Children, describes the work of the diagnostic clinic set up within the Center, its staff, and its method of working with local agencies when the child returns home. A summary of one deaf-blind child's visit to the Center illustrates aspects of the diagnostic program in action. *(Rehab. Lit.)*

850. RUSALEM, H., Deaf-blind persons: an epic study. *Rehab. Rec.*, 6, 1960, 26-30.

This article calls attention to seven publications concerning the deaf-blind which resulted from a study made at the Industrial Home for the Blind through an OVR grant. The publications reviewed included the following: (a) A Manual for Professional Workers, (b) Communication–A Key to Service for Deaf-Blind Men and Women, (c) Report of Medical Studies on Deaf-Blind Persons, (d) A Report on Psychological Studies with Deaf-Blind Persons, (e) Studies in the Vocational Adjustment of Deaf-Blind Persons, (f) Recreation Services for Deaf-Blind Persons, and (g) Survey of Selected Characteristics of Deaf-Blind Adults in New York State. These studies suggest that deaf-blind adults are less limited than usually supposed and that they do have potentialities which can be developed. *(D.R.F.)*

851. SORTINI, A. J., Rehabilitation of brain-damaged children. *Volta Rev.*, 63, 1961, 20-23, 421.

This article is the second of a series concerning children who have hearing losses and are brain damaged. He discusses the team approach and the close cooperation between the team and the classroom teacher. He makes suggestions for the wearing of hearing aids by each of the previously described groups and how the aids must differ according to the problem. Each type of handicapping condition necessitates different presentation of speechreading, auditory training, etc. He feels that it is extremely important that the clinician be flexible in his approach and that he must be ready to adjust himself to the needs of the individual child at a particular moment. It is a basic prerequisite for those children who are brain damaged that every effort be made to discover the child, diagnose his problems and special needs and then try to do something about it. *(J.B.M.)*

PSYCHOLOGICAL FACTORS

852. BRONZAFT, A., HAYES, R., WELCH, L., and KOLTUV, M., Relationship between PGR and measures of extraversion, ascendance, and neuroticism. *J. Psychol.*, 50, 1960, 193-195.

The Allport A-S Reaction Study and the Maudsley Personality Inventory were administered to 46 female college students and PGRs were obtained for these subjects in a simple avoidance situation. No significant correlations were found between the PGR and measures of extraversion-introversion and neuroticism. As the results did not support previous studies, the authors contend that differences in methodology, measurements and sampling may be responsible. *(E.H.N.)*

853. EVANS, L., Factors related to listening and lipreading. *Teach. Deaf*, 58, 1960, 417-423.

An investigation to measure the listening and lipreading abilities of 50 deaf children with particular emphasis on combining lip reading with aided listening. The results were correlated with auditory acuity, intelligence, and age. The mean hearing loss was 88.7 db in the better ear for 500, 1000, and 2000 cps. The mean Wechsler Performance IQ was 103 and the mean age 12 years 6 months. Five lists of sentences and words of increasing difficulty for auditory discrimination were used under three conditions: (a) aided listening, (b) unaided lipreading, and (c) combined aided listening and lipreading. Results of the investigation showed that 45 of the 50 deaf children had higher scores when combining listening and lip reading than when lip reading alone. Twenty percent improvement for the whole group was highly significant at the .01 level of confidence. Auditory acuity was found to be closely related to listening and combined scores, but not closely related to lipreading scores. Intelligence was found to be unrelated to scores for all three conditions. Age was found to be very slightly related to scores for the three conditions. *(M.S.K.)*

854. FELLENDORF, G. W., Factors affecting parents' decisions. *Volta Rev.*, 62, 1960, 341-345.

Parent education is the first step in the education of the deaf child. It can and should begin immediately and never be delayed. It should be based upon a hearing world approach that says the aim of any educational system is to help deaf children become educationally, socially, and vocationally integrated into the hearing world.

Parents must help set the goals for the educators of the deaf. This is their privilege and responsibility. In selecting a program of formal education, the child, the home, the school, and economic facts must be considered. The *whole* child, not just the deaf child, must come first. Decisions will affect his entire life and should be made on the basis of the best information and advice available. Sources of professional advice include pediatricians, otologists, general practitioners, psychologists, and speech therapists. Parents should also seek out the parents of successful deaf children for information and inspiration. The problem of deafness in children is one of education, not medicine. Parents should accept cautiously the advice of physicians who are not familiar with the educational as well as the medical prospects for the small deaf child. *(J.B.M.)*

855. LAMPARD, M. T., The art work of deaf children. *Amer. Ann. Deaf*, 105, 1960, 419-423.

The art productions of 20 deaf children were observed over a period of six years and compared with those of hearing children to evaluate their usefulness in revealing inner dynamics and for clues to better educational methods. Comparative descriptions of the paintings of deaf and hearing children, based on shape, color, line, composition, technique, and subject matter, revealed differences on the latter two items. In general, the deaf evinced developmental lag in technique, and there was considerable variation from week to week in the sophistication of the paintings of individual deaf children. The manner of work in most instances was fast, impatient and careless, but in other instances, slow, painstaking and rigid. The former was not characterized by spontaneous freedom, but rather by release or by lack of concern in the work and the message they might want to communicate. The deaf differed most from the hearing in subject matter. The deaf child apparently does not regard painting as story telling or information giving. With reference to inner dynamics the deaf child resorts to the reproduction of simple formulae through the years in his paintings which reflects a sense of safety in the familiar and fear of the new. This limiting of experience circumscribes learning and affects the acquisition of language as well as being affected by the slow acquisition of language contingent upon deafness. Educational implications of art work for the deaf are discussed. *(C.P.G.)*

856. LEVINE, E. S., Psychological assessment of the deaf. *Rehab. Rec.*, 6, 1960, 33-34.

This article is a report of a post-doctoral workshop in the Psychological Assessment of the Deaf, held at Gallaudet College in cooperation with the Department of Psychology and Psychiatry of the Catholic University of America. The program was organized to (a) arouse greater interest in rehabilitation problems of the deaf, (b) clarify some of the basic complications of early severe deafness, (c) acquaint participants with the contributions of other specialties also engaged in work with the deaf, (d) demonstrate various techniques used in psychological examination and appraisal, (e) familiarize participants with important field resources and (f) encourage work on behalf of the deaf among the participants within their own community. Specialities represented by the faculty included otology, special education, audiology, speech therapy, vocational rehabilitation, counseling psychology, clinical psychology, psycholinguistics, psychiatry, sociology, and research. *(D.R.F.)*

857. MURPHY, A., DICKSTEIN, J. and DRIPPS, E., Acceptance, rejection and the hearing handicapped. *Volta Rev.*, 62, 1960, 208-211.

The purpose of this study is to analyze, by a rating scale technique, the attitudes of 100 elementary classroom teachers, 46 school guidance personnel, special class teachers and nurses, 32 principals of elementary schools, 100 freshmen (teachers-to-be) and 31 speech clinicians toward hearing-handicapped individuals, and to compare their attitudes toward other types of exceptional children. The rating scale developed is based on a procedure suggested by Kvaraceus. Eight general categories of exceptionality are listed in the scale: hearing, visual, slow learners, emotionally disturbed, physically handicapped, gifted, speech, and delinquents. The subjects were asked, "Which type of exceptional child would you most prefer to teach?" "Which

type of exceptional child would you least prefer to teach?" "Which type of exceptional child do you know the most about?" "Which type of exceptional child do you know the least about?" Partial analysis of this data reveals that, with the exception of the speech clinician, hearing-handicapped children seemed to rank rather low in those most preferred to teach, the delinquent and visually handicapped falling below this level. With the exception of the speech clinician, the hearing handicapped is the group about which these professional workers felt least or nearly least knowledgeable. The more a person feels he knows about a handicapping condition the more inclined he is to want to work with children having that particular handicap. The hearing-handicapped person can be regarded from this data both as a member of a minority group and as susceptible to social and personal pressures like other minority groups. It is suggested that service training programs give more information about the less known exceptional child by increasing the amount of course work and observation in the area of exceptionality. The need for intensified public relation programs concerning the problems of persons with hearing disabilities and for further research to determine attitudes of acception and rejection according to intelligence, personality or physical status of the hearing-handicapped individual are among other suggestions made. There must be an intensified attempt to improve the attitude and knowledge of workers and the public concerning the persons with hearing problems. *(J.B.M.)*

858. **MYKLEBUST, H. R., The psychology of deafness.** New York: Grune and Stratton, 1960. Pp 393.

This book is essentially a compendium of the research conducted by the author and his students during the last decade on the psychological effects of deafness. The research was predicated upon the hypothesis that sensory deprivation modifies experience and, hence, alters the psychological integration and organization of the individual. It has revealed many hitherto obscure aspects of the impact of hearing impairment upon mental development, personality, motor function, language and speech development, speech reading, reading, writing, interests, aptitudes, special abilities, etc. Comparisons between the hypacusic took into consideration etiology, age at onset, sex, educational environment and other variables. Impairment of a specific sense or senses alters the hierarchy of psychological organization of an individual. This may be manifested in qualitative rather than quantitative difference, and in selective inferiority. Intellectually, the deaf test within normal limits when performance scales such as the WAIS, WISC and Grace Arthur, Form 1, are utilized. On nonverbal tests which require abstraction and conceptualization, the deaf may or may not be inferior to the hearing. Recent research suggests that when inferiority is found, it is associated with retarded language development contingent upon auditory deficit. As verbal ability increases there is the likelihood of an increase in the level of abstract functioning. Past research on the memory of the deaf indicated inferiority as compared to the hearing, Blair, however, has sharply brought into focus the selective effects of deafness on this ability. On tasks requiring memory for design, tactile memory and memory for movement the deaf excel the hearing. Conversely, on memory for dots, picture span and digits the deaf are inferior to the hearing. Explanations for the divergent results are presented. Although the deaf are not different from the hearing in intelligence as measured by the Draw-A-Man Test, nevertheless, item analysis revealed qualitative differences. This finding indicates that the test can be used projectively to evaluate the personality of the deaf without the contamination of intellectual factors. Personality and emotional adjustment of the hypacusic have been difficult to assess because of inadequate instruments. Inventories and projective techniques, e.g., the Rorschach, are too dependent upon verbal responses for use with the deaf, particularly at the younger ages. Other measures like Make a Picture Story and the Szondi Test may be used effectively with the deaf. Research with hard-of-hearing and deaf adults using the MMPI produced elevated profiles suggestive of psychotic propensities. However, analysis of the profiles indicated that deafness from early life, ". . . imposes a characteristic restriction on personality but does not cause mental illness." In motor ability the deaf manifested selective inferi-

XUM

ority. The discussions on language development, speech, speechreading, read and written language, etc. are presented within the framework of hierarchies of experience categorized into the levels of Sensation, Perception, Imagery, Symbolization, and Conceptualization. The studies show the deaf to be less retarded in concept formation than in language when compared to the hearing. Speechreading as a language system appears superior to the sign language with reference to the education of the deaf. The final section in the book is devoted to other handicaps, special abilities, aptitudes, interests, etc. *(C.P.G.)*

859. OSTERN, B., Language in personality development. *Volta Rev.*, 62, 1960, 322-323.

The forces affecting the child's progress in developing language are both intrinsic (what the child himself brings to the learning situation by way of perception, intelligence, motivation) and extrinsic (his psychological, social, and intellectual life experiences). Deafness imposes both intrinsic and extrinsic limiations of language and personality growth. To develop the full potential of the deaf child, not only must his own intrinsic abilities be utilized, but his environment must be enriched. A curriculum geared to his needs and interests can tap his nonverbal reactions, emotions, and ideas, thus giving him needed language for the expression of his own personality. *(Author's summary)*

860. ROY, H. L., Counseling center for the deaf. *Rehab. Rec.*, 6, 1960, 35-36.

This article is a description of the Counseling Center for the Deaf established at Gallaudet College in September, 1960. The Center will provide vocational, educational and personal counseling to deaf youths and adults in special schools and classes for the deaf as well as others in the metropolitan area of Washington, D. C. *(D.R.F.)*

861. SIMON, A. B., Helping your deaf child grow up—let him experiment and explore. *Volta Rev.*, 63, 1961, 35-39.

The author, who is a successful businessman and who is deaf himself, presents in this article a number of the feelings that the young deaf child may have upon his completion of school. He suggests ways in which families may help the child overcome these fears and gain self confidence. The author feels that adolescence was his period of greatest difficulty. Nevertheless, with the encouragement and support of his family, he learned to stand on his own feet. *(J.B.M.)*

862. THOMPSON, M. L., Group work with the hearing impaired. *Hearing News*, 28, 1960, 3-5.

Realizing that hearing loss presents a problem of social isolation, the Chicago Hearing Society has sought to help the hard-of-hearing meet this problem. Their methods are described in this article. A group worker has been employed to assist in the personal growth, adjustment and motivation of the hard-of-hearing person through group activities. The hearing-handicapped are encouraged to actively participate in group social activities with persons of normal hearing ability. A three-year demonstration project has revealed that the hard-of-hearing, in addition to associating with normally-hearing persons, prefer to also meet with the hard-of-hearing group once a week. The hearing-handicapped more readily participate with normally-hearing groups if their group can participate as a whole. *(D.A.H.)*

863. YORTY, J. B., Parents, let's relax! *Volta Rev.*, 63, 1961, 30-33, 39.

This is an open letter to mothers and fathers of children who are deaf. Mrs. Yorty, whose deaf child is now 14, reviews some of the heartaches and emotional feelings concerning the early stages of her child's development of speech and language. But she points out a number of different ways in which parents can relax, enjoy their children, enjoy their own lives, and still accomplish the task of raising a child who is capable of expressing himself orally in speech and in language. *(J.B.M.)*

Social and Legal Factors

864. BRUCE, W., Social problems of graduates of an oral residential school for the deaf. *Volta Rev.*, 62, 1960, 368-372.

The purpose of this study was to determine the degree of social integration achieved by graduates of the Clarke School for the Deaf in their daily vocational, edu-

cational, and community activities with hearing people. In addition, the study attempted to identify those factors which limited or precluded social integration within the hearing community. A questionnaire was devised to explore the following areas: general adjustment to auditory handicap, particular problem areas, personal techniques used in coping with problems arising from the hearing loss, personal evaluation as to status within the hearing community, schools for the hearing, and places of employment, and the extent of social participation with orally trained and nonoral deaf. The study covered graduates who had completed their training at Clarke School between June, 1943, and June, 1951, and who had attended Clarke School for a minimum of four years prior to graduation and were currently residing in the New England area ($N = 53$). A personal interview was conducted in the home of each graduate. The following findings appear to follow from this study: (a) A majority of Clarke graduates felt they were not adequately prepared for the social activities of the hearing community, schools with hearing students, and places of employment. (b) Graduates viewed their weaknesses and problems as the results of improper preparation rather than to the presence of a hearing handicap. (c) Lack of experience with the opposite sex while attending Clarke contributed to the lack of social maturity, and was identified by the alumni group as a cause for adjustment problems before and after marriage. (d) In efforts to overcome their social deficiencies, the deaf group developed or participated in activities designed to improve their social competence. Only a small minority made no attempt at social integration. (e) The study group viewed their lack of social skills to be of far greater importance in being accepted within the hearing community than the attitudes and feelings of their hearing neighbors. (f) Religious activities played only a minor role in the lives of the study group. (g) Social acceptance at places of employment and within the neighborhood appears to be dependent upon abilities of the deaf adult rather than desires of the hearing. (h) Speech and speech reading abilities appeared to be adequate for most daily activities for 44 of the 53 graduates. (i) Only 4 of the 53 graduates used signs and fingerspelling as primary forms of communication. (j) They tend to identify themselves more with hearing people than with the nonoral deaf. (k) Associations with the hearing are viewed as having definite advantages that justify efforts necessary to achieve same. Suggestions offered to future graduates indicate a strong belief that social integration can be achieved by most deaf people in schools, places of employment, and within the community. *(J.B.M.)*

865. DOMBRO, R. H., Meeting recreational and social needs. *Volta Rev.* 62, 1960, 328-331.

This paper presents the results of a five-year demonstration recreation project for children with serious speech and hearing disorders. The project was conducted by the Baltimore Hearing Society and supported by the Community Chest of Baltimore. These services were conducted in a normal speaking-and-hearing environment with the thought that the children would be better able to adjust to their respective neighborhoods after learning recreational and social skills while participating with youngsters who had no speech and hearing defects. *(J.B.M.)*

866. ELDREDGE, D. H., The problem of criteria for noise exposure, *Natl. Res. Council–Armed Forces Comm. on Hearing and Bio-Acoustics*, Oct. 1960, Contract NONR 2300(05).

The author has summarized the workings of CHABA Working Group 22 when that group ". . . was not able to draft and to agree on a general report . . . concerning criteria. . . ." The inability for complete agreement arose because to date data is generally inadequate with respect to knowledge of (a) noise level and frequency spectrum of exposure, (b) duration of exposure, (c) progression of threshold shift, and (d) proportion of persons exposed to noise who developed a threshold shift. In this report forty-six references are reviewed and the criteria of 12 different groups are listed and discussed. These include Navy and Air Force Regulations and Soviet Union standards. *(J.C.W.)*

867. LANGDON, M. A., The residential school child and the community. *Volta Rev.*, 62, 1960, 269-270.

This paper presents the Clarke School for the Deaf's integrated social program for the children in a residential school for the deaf begun on an experimental basis four years ago. The authors feel the children in a residential school are rather well accepted with hearing adults and their own classmates. However, to be completely well-adjusted individuals these young people must be given an opportunity to acquire social poise with hearing groups of the same age level. Thus far the experimental program has proved that an integrated social program can be an extremely valuable experience to deaf students. *(J.B.M.)*

868. LIDÉN, G., The assessment of disability caused by being hard of hearing. *J. Laryngol. Otol.*, 74, 1960, 556-565.

In this paper, read before a group of British otologists, the author reviews various methods of evaluating hearing loss for purposes of disability assessment, then reports on practices currently followed in Sweden. "[We] are using the threshold for speech as a basis for assessment . . . . But even if we have been wary of using the social adequacy index alone, we have tentatively used it in the form derived from the discrimination test as a yardstick in cases where it is deemed desirable to make the percentage of disability a little higher in order to compensate for a little discrimination loss which is unlikely to benefit from treatment . . . . Suppose a patient is found to have a hearing threshold for speech of 40 decibels and a discrimination loss of 40%. The social adequacy index will then be 36. This figure is sought in the horizontal row for zero percent. Discrimination loss and will be encountered under the hearing threshold 48 decibels. Thus, the hearing threshold would be uprated from 40 to 48 decibels. . . ." A study of the relationship between measured hearing loss and self-ratings of practical hearing difficulties was made for 275 patients. Understanding "was slightly difficult with a hearing loss of 30 db, moderately difficult at 40 db, extremely difficult at 50 db, and somewhere between extremely difficult and impossible at 60 db hearing loss." Tentatively, a 45 db loss for speech is regarded as tantamount to 10% disability. For each additional 5 db of loss up through 55, five percentage points of disability are added. A loss of 60 db is regarded as tantamount to a 30% disability; a loss of 65, to 40% disability. Greater losses are evidently regarded as total deafness, which in turn is considered as 50% disability. *(C.L.)*

Vocational Training and Adjustment

869. BIGMAN, S. K., Occupations of the deaf. *Rehab. Rec.*, 6, 1960, 23-126.

This article summarized a study of some 10,000 deaf persons in the United States interviewed during 1956-57. The sample consisted of 86% men, 20 to 59 years of age, 97% white, and 80% were reportedly employed. The median annual income was $3,465 as compared with the national figure of $2,818. The findings indicated that nearly 400 distinct occupational titles were reported with relatively large numbers distributed among the following: printing craftsmen, teachers, farmers, machine operators, assembly line workers, and dressmakers and seamstresses. The printing trades attracted a large portion of the deaf population and it is interesting that 80% of those whose longest job was in that field indicated that they would enter it again if given the choice. More than 50% of the employed deaf (25% in total U.S. population) were in manufacturing industries. The industrial strongholds of the deaf were the printing and publishing industries. The survey suggested acceptance of the deaf by unions and on the job. Working conditions and earnings were considered good by the majority, but total results indicated some dissatisfaction with opportunities for advancement. *(D.R.F.)*

870. JENKS, M. K., Guidance—the heart and core of the rehabilitation process. *Volta Rev.*, 62, 1960, 411-412.

This paper discusses the federal government's program for rehabilitation of the acoustically handicapped. Two groups are considered—the young deaf people who have been students in a school for the deaf and the older people who have acquired deafness. The author emphasizes that while communication has reached a high peak, it is not effective unless there is understanding both by the guidance counselor as well as the deaf or hard-of-hearing individual. The main responsibility

of vocational rehabilitation is diagnosis, prognosis of employability, and training as well as a follow up after the individual is on the job. Procedures for carrying out the above mentioned are discussed briefly. *(J.B.M.)*

871. **LOZINSKY, V. D., Iz opyta organizatsii obucheniya sel'ckokhozyaistvennomu trudu glukhonemykh shkol'nikov.** (How to organize the instruction of deaf-and-dumb pupils in agricultural work.) *Spetsial'naya Shkola,* 95, 1960, 7-11.

The problem of preparing deaf-and-dumb children to support themselves is complicated. Though most come from villages, very few take up agriculture, but collect in towns with bad housing conditions and undesirable influences. The Chernovitsky School Educational Committee therefore decided to introduce agricultural classes and practical work on an experimental plot of land and a subsidiary farm. To avoid altering the school timetable, classes in the workshops and in agriculture were parallel. All pupils over 12 were divided into eight "brigades," working four hours every eight days at all kinds of seasonal agricultural work. During the summer holidays every pupil worked 15-20 days at agricultural work. Drawbacks of this system were the wide gap between theoretical and practical courses and the difficulty in arranging for pupils taking final exams. An optional course on principles of agrotechnics was not popular owing to the complicated syllabus. Widening and improving the nature-study lessons would be preferable. A properly equipped cabinet for experiments was also needed. To sum up the results achieved so far: pupils willingly underwent agricultural training, most working very conscientiously; productivity in many cases was high, bringing in a good profit, used to improve pupils' living conditions; a large number of school-leavers received agricultural as well as factory training and some went to work on *kolkhozes* (collective farms); individual pupils showed talent for creative work in plant biology and are now working in experimental fields; pupils had many successes in local agricultural exhibitions. Such successes lead to the following conclusions: (a) horticulture and market-gardening are very suitable occupations for deaf people, educated up to 7-year secondary school syllabus; (b) deaf-and-dumb pupils from villages should be trained for work in agricultural production to avoid unnecessary concentrations in big towns; (c) deaf people with limited speech possibilities can use their abilities more fully in agricultural production. To overcome the reluctance of most deaf pupils to return to their native *kolkhoze,* one should instil a love of agricultural work into them from a very early age; open schools for deaf-and-dumb children with agricultural leanings in every state; see that workshop and agricultural training run parallel in all schools; introduce the necessary syllabus changes to widen the scope of nature study; and introduce the principles of agrotechnics in a more popular form. *(H.G.W.)*

872. **MEIER, M., Adjustment of deaf children: who, what, when, where, how.** *Volta Rev.,* 62, 1960, 412-413.

This paper discusses the need for adjustment by the child, parent, teacher, doctor, and speech and hearing therapist to the child's hearing handicap. The author suggests that the aforementioned must realize that there is no one right way and no one infallible person or clinic or school. She continues the presentation with a number of questions to be studied by parents, professional workers, and the deaf child as to how and where guidance can and should begin. *(J.B.M.)*

873. **QUICK, M., Role of administrator in the guidance program.** *Volta Rev.,* 62, 1960, 418-420.

The author offers the point of view that counseling and guidance should start as a part of the school curriculum rather than waiting for the child to graduate from college. She believes it is the function of a guidance counselor to give direction and/or advice to the individual so that he can realize his potential in the comfortable, healthy fashion. If the school cannot afford a counselor, it is the administrator's duty to coordinate a program that will take the place of such an individual. This can be accomplished by selecting a suitable class placement for pupils. Supervisors

should watch the child for signs of strain and frustration within the class or dormitory. The school needs to guide children in activities outside the classroom. This makes it possible for the hearing handicapped to join in activities with hearing boys and girls. Parents can assist by making sure the children maintain contact with friends and family outside of school. She concludes by making suggestions for helping those children who cannot adjust to the school or community activities. In these instances, a school cannot afford to provide all the diagnostic evaluation and therapy that is needed. They must make use of the resources within the larger community of the city or state. Prevention of maladjustment is a must. *(J.B.M.)*

874. THOMPSON, R. E., Adjustment in high school with normally hearing contemporaries. *Volta Rev.*, 62, 1960, 414-417.

This paper discusses the needs of the child and his decision concerning entering a high school for children with normal hearing or one for children who are deaf. The author states that it is the role of the guidance counselor to help the young man or woman consider the pros and cons of each program and to help him choose the program where he will be and feel the most comfortable. "Acting like a normal person by attending a regular high school is not the same as feeling like a normal person or like a worthy human being despite his hearing impairment." This paper continues by discussing the need for guidance counselors in schools for the deaf. *(J.B.M.)*

875. WILLIAMS, B. R. and CHASE, E. A., Deafness: new approaches. *Rehab. Rec.*, 6, 1960, 17-21.

The communication problem of seriously handicapped deaf clients apparently precludes their utilizing rehabilitation services available to other handicapped citizens. In spite of this, comprehensive rehabilitation services for the deaf were found to be nonexistent. Further, the authors were concerned about "the tantalizing oversimplification that 'if only they could be taught to speak and read lips their problems would be entirely solved,' (which) has gripped incoming professional workers to the extent that rich, creative thinking about the needs of the whole man has been stifled or lain dormant." Also there was an absence of private voluntary agencies and organizations developed on a national scale similar in scope to the National Foundation which brought polio to the public's attention. Against this background, a two-year program designed to emphasize the rehabilitation needs of deaf people was undertaken by the Office of Vocational Rehabilitation. This article reviews some steps taken in this regard since 1959. In October, 1959, a workshop attended by 34 specialists on rehabilitation facilities or professional services offered in such facilities called for leadership in the establishment of three types of rehabilitation facilities for the deaf: (a) a comprehensive, free-standing institution, possibly a regional center, (b) a facility within a school for the deaf or other institution, (c) a facility within an established comprehensive rehabilitation center. In cooperation with state vocational rehabilitation agencies and schools for the deaf, centers for the deaf have been organized and are under development in several states. Short-term training courses for rehabilitation counselors, have been conducted at Gallaudet College. Training institutes for rehabilitation workers have been held on the east and west coasts. The proceedings have been published and serve as handbooks for those learning about the multi-facets of deafness. Workshops for post-doctoral psychologists have been conducted at Gallaudet College in cooperation with Catholic University. The Psychology Department of Catholic University through an OVR grant has undertaken to conduct research and training programs in the field of deafness. The program carried out with OVR financing at the New York State Psychiatric Institute has evolved improved in-patient and out-patient procedures for diagnosis and treatment of deaf patients with mental or emotional problems. An occupational survey conducted by the NAD with an OVR grant suggested serious underemployment of deaf people. The Tracy Clinic studies on lipreading are cited as are *The Psychology of Deafness* by E. S. Levine and another study in progress concerning "Vocational Adjustment of Workers with Impaired

Hearing." Other projects cited included a study of deaf persons in professional, technical or managerial positions; a Central Index in Research for the Deaf; a workshop on researchable vocational rehabilitation problems, and the establishment of a demonstration guidance and counseling center. *(D.R.F.)*

SPEECH

Acoustics

876. AIKENS, A. J., and LEWINSKI, D. A., Evaluation of message circuit noise. *Bell Syst. tech. J.*, 39, 1960, 879-909.

The reduction and control of message circuit noise requires that its effects be quantitatively characterized. This is achieved by measuring some physical attribute of the electrical noise such that two noises that are judged to be equally interfering are assigned approximately equal numerical magnitudes. To give meaning to such magnitudes, the scale of measurement is related by way of subjective assessment into terms useful to telephone engineering. Pertinent to message circuit noise measurement is the characterization of the relative interfering effect of single-frequency noise components and the way the ear combines these components to indicate the total effect. The correlation between a noise measurement and its associated overall end-effect may be made by finding the transmission-loss equivalent of the noise being measured or by the direct application of telephone-user opinions expressing degree of transmission satisfaction. In addition to these topics, this paper discusses certain engineering aspects of noise evaluation. *(Authors' summary)*

877. ALEXANDER, R. D., Communicative-mandible-snapping in acrididae (orthoptera). *Science*, 132 (3420), 1960, 152-153.

Taped recordings of repeated series of ticks by individual *Paratylotropidia brunneri* in apparent response to an imitated sound produced mechanically by the experimenter suggest that this short-horned grasshopper is the first insect known to possess a long-range mandibular sound signal. *(F.R.)*

878. BROWN, W. J., A new fluttermeter. *Bell Lab. Rec.*, 38, 1960, 146-149.

Apparatus recently developed at Bell Laboratories makes it possible to measure flutter readily both on the production line and in the field. Sources of flutter are discussed as are the ranges of acceptable flutter. The fluttermeter has full-scale values of 1.5% and 3% and covers a flutter frequency range of 0.5 to 120 cycles per second. *(E.D.S.)*

879. CHERRY, C., and BOWLES, J. A., Contribution to a study of the "cocktail party problem." *J. acoust. Soc. Amer.*, 32, 1960, 884.

Using white noise presented through earphones, the subjective localization of the sound source is varied through the subjective field by adjusting the tapping points on an electrical delay line. The ability to localize sound sources, comparing the ability to separate speakers as opposed to white noise, depends on the sounds having first been separated as images prior to the experimentation. Research is continuing on this phenomenon. *(B.A.L.)*

880. COCHRAN, W. T., A new noise-measuring set. *Bell Lab. Rec.*, 38, 1960, 227-231.

A new noise-measuring set for telephone circuits, designated the 3A, has been developed at Bell Telephone Laboratories. In its design, emphasis has been placed on small size, lightness, and consistency of performance. Efforts have been made to have the meter simulate the frequency response and temporal characteristics of the ear. Provision is made for the device to be used as an AC amplifier or to drive a DC recorder. *(E.D.S.)*

881. COCHRAN, W. T., and LEWINSKI, D. A., A new measuring set for message circuit noise. *Bell Syst. tech. J.*, 39, 1960, 911-931.

A new message circuit noise measuring set is described. The instrument is an easily portable, visual-indicating and direct-reading device with which rapid and accurate noise measurements may be made. The set is fully transistorized and battery powered, small in size and light in weight. It can be used for bridging, terminating and noise-to-ground measurements with a

variety of plug-in weighting networks, one of which is the new C-Message weighting designed for the 500-type telephone set. The sensitivity of the set is such that it can detect −90 dbm. This value is chosen as the new reference for measurement and is defined as "zero dbm." *(Authors' summary)*

882. FLANAGAN, J. L., Analog measurements of sound radiation from the mouth. *J. acoust. Soc. Amer.*, 32, 1960, 1613-1620.

Free-field measurements of the sound radiated from the mouth of a life-size mannequin are described. A transducer installed in the head of the dummy is calibrated to produce a known acoustic volume velocity at the lips. The sound field in vertical and horizontal planes through the head is explored with a pressure microphone. Measurements of pressure magnitude and phase are made for frequencies of 250, 500, 1000, 2000, and 4000 cps. The results are compared with the sound distributions for a simple spherical source, and for a small piston in a sphere of 9-cm radius. Over the frequency range investigated, and within a solid angle of about *pi* sr centered on the mouth axis, the relations for the simple source are found to describe the measured magnitudes within approximately 3 db, and the measured phases within approximately 30 deg. The results are also compared with previously reported pressure distributions for speech. Some brief comment is devoted to approximating the radiation impedance of the mouth. *(Author's summary)*

883. FOULKES, J. D., Computer identification of vowel types. *J. acoust. Soc. Amer.*, 33, 1961, 7-11.

Using the classic data from the 1952 Peterson and Barney study on vowel formants, the present author describes a coordinate transformation system to enhance computer identification of vowel boundaries. Taken into account are the frequencies of the first three formants plus the fundamental frequency. These are converted to three parameters, one of which is useful only to differentiate the syllabic *r* vowel. *(B.A.L.)*

884. GILBERT, E. N., Capacity of a burst-noise channel. *Bell Syst. tech. J.*, 39, 1960, 1253-1265.

A model of a burst-noise binary channel uses a Markov chain with two states G and B. In state G, transmission is error-free. In state B, the channel has only probability h of transmitting a digit correctly. For suitably small values of the probabilities, p, P of the B → G and G → B transitions, the model simulates burst-noise channels. Probability formulas relate the parameters p, P, h to easily measured statistics and provide run distributions for comparison with experimental measurements. The capacity C of the model channel exceeds the capacity C (sym. bin.) of a memoryless symmetric binary channel with the same error probability. However, the difference is slight for some values of h, p, P; then, time-division encoding schemes may be fairly efficient. *(Author's summary)*

885. HARTLIEB, K., and FRÜH, K. F., Funktionsanalyse der menschlichen Stimme. (Analysis of the function of the human voice.) *H.N.O.*, Berlin, 9, 1960, 41-49.

The writers use the Siemens-Cardiomat electrocardiograph connected with a microphone and an amplifier for the registration of laryngeal vibration. The analysis of the human voice can be performed by taking down and analyzing the spectogram of the tone or by registration of the action potentials. The action potentials are recorded by the electrocardiograph, thus producing an "electra-vocogram." A change in loudness, of course, shows in a change of amplitude. The course of changes of loudness in prescribed rhythmic voice exercises make it possible to study the voice. The paper on which the vocagram is registered moves at a speed of 50 mm/sec. Pictures of the instrument used and curves illustrate the whole procedure. The vocagram can help during the treatment of abnormal vocalization, which shows labile "accents." Vocagrams of normal voices and the laughing and singing of 10 students of singing were examined (breathing, glottal stop, forward-backward movements of the thyroid and cricoid cartilages). The writers also discuss the voices of famous singers of both sexes. The analysis of the vocagrams takes into consideration the

rhythm (regular, irregular), frequency (constant, inconstant), duration of closing and opening of the glottis, the changes of shapes of the curves, and the impulse. *(E.F.)*

ANATOMY AND PHYSIOLOGY

886. BALLARD, C. F. and BOND, E. K., Clinical observations on the correlation between variations of jaw form and variations of oro-facial behavior, including those for articulation. *Speech Pathol. Ther.*, 3, 1960, 55-63.

Dental malocclusions are the result of inherited variation. Soft tissue postures and patterns of movement can be differentiated as endogenous and as subconscious habits of adapting to the oro-facial structure. Variations in jaw and tooth angular relationships are measured on lateral radiographs. Structural differences require different adaptive articulatory movements for acceptable speech. Some articulatory defects are related to the difficulty of learning movements when the inherited structure is more widely varied, and also to inherited behavior patterns. Patterns of movement for correcting articulatory defects should be taught after age seven or eight, but only after auditory perception methods have failed. The study implies that the articulation of a language evolves from inherited abilities rather than imitation. *(A.J.B.)*

887. BOWDEN, R. E. M., and SCHEUER, J. L., Weights of abductor and adductor muscles of the human larynx. *J. Laryngol. Otol.*, 74, 1960, 971-980.

In a series of twelve human larynges the weight of the abductor muscles was only one quarter of the weight of the adductor muscles, and this relationship bore a high coefficient of correlation (0.8). It is suggested that this inequality in bulk between the adductors and abductors might contribute to the apparent vulnerability of the latter and so provide some anatomical basis for Semon's law. *(Authors' summary)*

888. ESSLEN, V. E., and SCHLOSSHAUER, B., Zur Reflexinnervation der inneren Kehlkopfmuskeln. (Concerning the reflex innervation of the internal laryngeal muscles.) *Folia Phoniat.*, 12, 1960, 161-169.

A reflex potential is recorded from the laryngeal muscles on excitation with single square wave shocks of the superior laryngeal and the recurrent nerve in patients undergoing extirpation of the larynx because of cancer. This reflex potential shows the criterion characteristic for the reflex potential arising on excitation in limb muscles. The potential suggests that muscle stretch receptors must be present in human internal laryngeal muscles. The pathway of afferent fibers for the main part is via the superior laryngeal nerve but there seems to be an indication of a small part of afferents in the recurrent nerve also. *(J.B.R.)*

889. GANDEVIA, B., Normal standards for single breath tests of ventilatory capacity in children. *Arch. Dis. Childh.*, 35, 1960, 236-239.

Indices of ventilatory capacity derived from the forced expiratory spirograms of a series of healthy school children are related to standing height. Attention is drawn to certain differences between the sexes in regard to the proportion of the vital capacity expired in the first second or half second of a forced expiration. *(Author's summary)*

890. HERSCHBERGER, A. C., Delayed loss of function due to brain lesion. *Psychol. Rec.*, 10, 1960, 1-8.

The course of events during the recovery from brain lesions is described. Two hypotheses have been advanced as explanations of the dysfunction of the areas of the brain which did not sustain direct lesions. Von Monakow offered the idea of a shock-like reaction to areas not directly altered as a result of the insult. Alford proposed that instead of a shock-like disruption, an edema-like reaction had the effect of radically depressing areas which were unaltered by the insult. Herschberger, in an attempt to test these hypotheses and to try out the experiment of Forgays, tested 75 female rats after surgical introduction of cerebral lesions. 45 rats were used as the control group. An avoidance response was used as the learning task from which to observe the course of events during recovery from brain lesions. Behavior was observed in one-hour operates, one-day operates, one-week operates, three-week

operates, and six-week operates and in the control groups. Both the Von Monakow and Alford hypotheses were substantiated in that the shock-like effect occurs immediately after the cerebral insult and the edema-suppressive effect occurs two weeks later. *(J.G.S.)*

891. LADEFOGED, P., The regulation of sub-glottal pressure. *Folia Phoniat.*, 12, 1960, 169-175.

Research into the function of the respiratory muscles in speech has lead to the development of a system for measuring sub-glottal, tracheal pressure. The technique reported involves the correlation of esophageal pressure with tracheal pressure. A small latex balloon 1.5 cm diameter and 2.5 cm long is passed through the nose into the esophagus until it is just above the bifurcation of the trachea. This is usually about 34 cm from the external nares for a subject 1.8 m tall. When the balloon is filled with 2 ml of air an approximate sphere of air is held between the thin posterior membrane of the trachea and the vertebral column. Any pressure changes in the trachea are transmitted to the air in the balloon. The pressure in the balloon is transduced on a cathode ray oscilloscope. The technique is used to investigate the reaction times of speakers and Stetson's theory of the syllable. Tentative conclusions do not support Stetson's contention that there is nearly always a peak of sub-glottal pressure corresponding to each syllable. *(J.B.R.)*

892. LEDEN, H. Von, Laryngeal physiology. *J. Laryngol. Otol.*, 74, 1960, 705-712.

This is a summary of the author's commentary presented during his showing of four motion pictures to the Section of Otolaryngology of the Royal Society of Medicine in 1959. The films shown, which were produced by the author in collaboration with Paul Moore, were "The Function of the Normal Larynx," "Physiology of the Larynx under Daily Stress," "Air Pressure and Laryngeal Vibrations," and "Contact Ulcer of the Larynx–Etiologic and Experimental Observations." *(C.L.)*

893. LUBART, J., The adenoid problem. *Arch. Pediat.*, 77, 1960, 491-495.

The hypertrophy of the postnasal lymphoid tissue (adenoid) was not considered important until Meyer of Copenhagan in 1868 reported its effect on the hearing and body of the growing child. Chemobiotics are valueless in removing the obstructive effect of enlarged adenoids. In children the postnasal space or nasopharynx is only about 1/4 by 1/3 of an inch. Even moderate enlargement of the adenoids can fill this area and interfere with nasal respiration and sinus drainage. Most authors stress the blocking of the eustachian orifices in the nasopharnyx and interference with nasal respiration of adenoid enlargement but fail to emphasize sufficiently the damaging effect of impairment of sinus drainage and ventilation. The only effective treatment for enlargement of the adenoids is surgical removal. One is taking a chance if he leaves this procedure to an occasional operator. Adenoid tissue can be left in crucial areas with complete defeat of the purpose of the operation. Although tonsillectomy is usually not practiced before the child is 4 or 5 years old because of the possibility of regrowth and the possible interference with rapid growth of the pharyngeal soft parts, there is no such age restrictions with regard to adenoids. They have been removed in infants as young as several months with excellent results. In expert hands the procedure should take only a few minutes and involves little more surgery than a myringotomy. In a summary of 11 items, three were as follows: adenoid hypertrophy causes earaches, running ears, mastoid infection and deafness; impairment of voice; mental dullness, due partly to infection and partly to associated deafness. If unattended, this condition will in adult life cause catarrhal deafness and chronic sinusitis. *(M.N.)*

894. MORGAN, L. C., Effect of temperature and humidity on hearing acuity. *Volta Rev.*, 62, 1960, 364-368.

This paper reports the results of a preliminary study designed to discover trends in a possible relationship between weather conditions and hearing acuity. The physical plant is described. It consists of a controlled atmosphere test room designed to maintain an independently ambient temperature range from 20° to 90° F. and relative humidity from 40 to 95%. Pure tone audiometric tests were given at various temperatures and at various degress of humidity. Fourteen male students between the

ages of 18 and 28 were used. Seven of the group had normal hearing and seven had a hearing loss of at least 35 db. in the frequencies 125 through 8000. The author states in summary that the optimum temperature and humidity combinations for hearing acuity according to the results of this study are 50° F. with a relative humidity of 70%, and the combination of 70° F. with the humidity range of 50-65% was next best. The author also emphasizes the need for this kind of study to be carried out on larger groups of subjects. *(J.B.M.)*

895. PALUDETTI, G., Il Muscolo sternotiroideo e la sua importanza nel meccanismo di tensione delle corde vocali. (The sterno-thyroid muscle and its importance in the tension of the vocal cords.) *Clin. Otorinolaringoiat.*, 12, 1960, 83-95.

The theory that the function of the sterno-thyroid muscle is to rotate forward the thyroid cartilage, thus contributing to the tension of the vocal cords, has been generally accepted. Recent investigators, among them Merkel, do not agree with this theory. They interpret the function of the sterno-thyroid muscle as pushing backwards the thyroid cartilage, thus contributing to the relaxation (or distension) of the vocal cords instead of contributing to their tension as generally believed. The evidence upon which the investigators base this hypothesis is reviewed. A series of personal investigations of the human larynx was undertaken with the purpose of establishing the true position of the rotation axis of the thyroid cartilage over the cricoid cartilage, and its relation to the "linea oblique." Data obtained from such investigations enables the author to assert that in the majority of cases, the "linea oblique," which represents the thyroid cartilage rotation axis, is situated completely ahead of the cricoid joint. From these observations one can conclude that the sterno-thyroid muscle acts entirely in front of (or beyond) the rotation axis, and it is only in a few exceptional cases that a small action takes place behind it; therefore, it is difficult to agree with the hypothesis presented by Merkel and other investigators. Thus, the validity of the original theory is thoroughly confirmed. *(I.C.L.)*

896. PALUDETTI, G., and FORTUNATO, G., Meccanismo, utilita' e svantaggi della voce di false corde. (Mechanism, utility and drawbacks of the ventricular phonation.) *Il Valsalva*, 36, 1960, 264-277.

The authors have studied the mechanism through which vocal compensation is established in subjects on whom cordectomy of Réthi's cordopexy has been performed. Outstanding importance is attributed to the so-called ventricular muscle, but having shown on the basis of histological research that its size and importance is extremely variable from case to case, the question of the creation of ventricular phonation remains an open one for all those cases where the ventricular muscle is reduced to a few fibres of no functional importance. In these cases a mechanism must be envisaged similar to that described by Réthi and based on the action of extrinsic laryngeal muscles. . . . In conclusion it is recalled that ventricular phonation is at times useful for the patient (permanent lack of the true folds) and in this case it is to be respected and even potentiated while at other times it may be damaging (e.g., the case of hyperkinetic dysphonia) and should be eliminated with suitable phoniatric therapy. *(Authors' summary)*

897. SMITH, J. L., and STOWE, F. R., The Pierre Robin syndrome (glossoptosis, micro-gnathia, cleft palate): a review of 39 cases with emphasis on associated ocular lesions. *Pediatrics*, 27, 1961, 128-133.

Analysis of 20 males and 19 females (6 Negro, 33 white) is presented. In one-fourth of the cases, a history of intrauterine disturbance in early pregnancy was noted. The syndrome appears to occur more frequently in offspring of elderly mothers. Obstetric features of early pregnancy and late gestation are described. A positive family history was noted in two instances. Certain indices are present in histories: sternal retraction, difficulty in swallowing, recurrent cyanotic episodes in the newborn, excessive mucous secretion, and stertorous respiration which occurs in the supine position but is relieved by placing the child in the prone position allowing the ptotic tongue to fall forward. Micrognathia ("Andy Gump" appearance), cleft palate or other defects of the hard and soft palate, various anomalies of the tongue, commonly glossoptosis, are noted in physical examinations. Certain ear and hearing

defects of 11 cases are described. Fontanelles are reported as abnormal in 8 cases and mental retardation present in 10 cases. Cardiac murmurs are reported for 9 cases; anomalies of fingers and toes noted in 8 cases. Nine major eye lesions are noted in 15 cases. Failure to thrive and gain weight is frequent before three years of age apparently due to insufficient nutritional intake. By three years of age the cases had learned to swallow well. Suturing of the tongue tip to the lower jaw usually in the first few days of life is reported in 16 cases. Cleft palate repair is delayed until 2 or 3 years of age. Surgical repair of micrognathia was attempted in a few cases before it was realized that the majority of cases spontaneously outgrow micrognathia. *(N.J.C.)*

898. ZANINI, J. C., Los problemas de la comunicacion y su relacion con la patologia neurologica. (Communication problems and their relation to neural pathology.) *Acta audiol. foniat. Hispano-Amer.*, 2, 1960, 161-176.

The main objective of this paper was the revision of the field of nervous system diseases when they alter the function of those structures which interfere in the formation and production of language causing more or less serious alterations in interhuman communication. Known and hypothetic paths through which stimuli pass that form and produce language were reviewed, utilizing the pathologic method to locate these structures. Various pathologic processes affecting auditory pathways from the receptor to the temporal cortex were mentioned, marking the different types of deafness they produce. Several localization theories of cerebral cortex and clinical pictures are pointed out in the symbolic level of language; the most recent evidence based on electrostimulation and cortical excision that leads to a belief in a hypothetical cortico-thalamic language system was added. A Gerstman syndrome case due to cerebral hemorrhage and a case of motor aphasia due to cerebral contusion were presented. Different articulatory disorders from subcortical dysarthria to peripheral dysarthrias were analyzed. Voice recordings of a Parkinsonian patient, of an amiotrophic lateral sclerotic and of a facial dyplegic in a Guillain-Barré syndrome were discussed. *(Author's summary)*

Auditory Feedback

899. BUSALA, A., Fundamental considerations in the design of a voice-switched speakerphone. *Bell Syst. tech. J.*, 39, 1960, 265-294.

The speakerphone is a telephone set in which the usual handset is replaced by a separate microphone and loudspeaker in order to free both hands and to permit conference calls. Problems of gain, singing and echo in such a system can be partially solved by voice switching, but problems of unnatural one-way transmission, initial and final clipping, and the necessity for more flexible automatic volume control then arise. Remedies for these and other voice-switching problems are discussed. *(E.D.S.)*

900. GOLDIAMOND, I., Blocked speech communication and delayed feedback: an experimental analysis. *South. Ill. Univ.*, TR 1, Feb., 1960, on AFCRC Contract AF 19(604)-6127.

The experiment examines the effectiveness of delayed feedback in controlling blocked verbal communication. Stuttering subjects read aloud and the number of blocks are determined. When delayed feedback is made contingent upon blocking responses the number of blocks tends to be reduced. Conversely when escape from delayed feedback is made contingent upon blocking responses the number of blocks tends to increase. *(J.C.W.)*

901. GOLDIAMOND. I., ATKINSON, C. J., and BILGER, R. C., Adaptation to delayed feedback as a function of instructions not to monitor. *South. Ill. Univ.*, TR-3, Sept. 1960, on AFCRC Contract AF 19-(604)-6127.

Two subjects who had stabilized their reading rates under conditions involving the presentation of delayed and normal auditory feedback, were then exposed to sessions which included 10 minute periods of normal feedback, and three durations of delay. Two sets of instructions were given, one to read as rapidly as possible without listening to themselves, and the other, to read as rapidly as possible, but

to listen to themselves. The instructions and feedback conditions were combined. Reading rate was high when instructions were not to listen, and subjects were presented with normal or with delayed feedback. Reading rate was also high when instructions were to listen to themselves, but feedback was normal. Reading rate was low when instructions were to listen, and delayed feedback was applied. Some of the highest rates were obtained when delayed feedback was presented. The results were also interpreted to suggest that the steady state emerging from prolonged exposure to delayed feedback may not be similar to the results obtained when it is studied for limited periods of time. *(Authors' summary)*

902. HASPIEL, G. S., Effects of monaural side tone delay compared to binaural delay on the fluency of normal speakers. *Penn. Speech Ann.*, 17, 1960, 57-60.

Eighteen normal adults read equated passages under conditions of no delay, monaural delay and binaural delay of the side tone. The mean reading time was significantly greater in the monaural delay than in the no delay condition, but the difference in reading time between the monaural- and binaural-delay conditions was even greater. *(A.J.B.)*

903. TARIS, C. M., New audio facilities for recorded announcements. *Bell Lab. Rec.*, 38, 1960, 102-105.

Two new systems are expected to help meet the increased demand for recorded announcement services. They have been designed to include several improvements, including more flexible relay switching, provision for remote control and remote recording, and variable cycle operation that gives greater freedom in choosing the length of the recorded announcement. *(E.D.S.)*

Communication Theory

904. ARTEMOV, V. A., O vzaimootnosheniakh fizicheskikh svoistv, vosprinimaiemykh kachestv, iazykovykh znachenii i smyslovogo soderzhania rechi. (Interrelation of the physical characteristics, perceptual qualities, meaning, and sense content of speech.) *Voprosy Psikhol.*, 1960, 3, 98-105.

Discussed in this article are some interrelations of the physical characteristics, perceptual qualities, meaning, and sense content of speech. This is done on the basis of the experimental data obtained in the author's laboratory. The author comes to the conclusion that the production, transmission, and comprehension of a speech signal are subject to the rules of representation, structure, code, transformation, and experience, and are realized according to a general scheme of communication. *(Author's summary)*

905. GERSTMAN, L. J., and BRICKER, P. D., Word frequency effects in learning unknown message sets. *J. acoust. Soc. Amer.*, 32, 1960, 1078-1079.

A recent (1959) paper by Pollack, Rubenstein, and Decker reported on the effects of word frequency in learning an unknown message set. They also analyzed incorrect responses in terms of the S/N ratio. The present authors attempt to explain these results in terms of recording levels, rare words, etc. *(B.A.L.)*

906. PITTENGER, R. E., HOCKETT, C. F., and DANEHY, J. J., The first five minutes. Ithaca, New York: Paul Martineau, 1960. Pp 264.

The research reported in this book is concerned with the description of the events of a psychiatric interview through the combined approach of anthropological linguistic specification of communication signals and psychiatric specification of the states of the two persons involved. Specific hypotheses were not formalized at the outset. The problem is describing what happens in this two-person system and is based on the assumption that the techniques of psychiatric diagnosis and therapy can be objectified, specified, and described through examination of the dynamics of communication systems and, therefore, can be taught without recourse to mysticism. The sample consisted of a tape recording of the first five minutes of a patient's initial interview with an experienced psychiatrist which was transcribed phonemically and paralinguistically. The transcriptions included the pronunciation, intonation and stress of the successive words, location and duration of pauses, hems and haws, sighs, gasps, coughs, throat clearings, rate,

register, volume, and tone quality. Using the transcriptions and original tape, the authors, two psychiatrists and an anthropological linguist, taped a series of conferences devoted to microscopic analysis of each moment of the interview. The first analysis was transcribed and edited and used as the basis for continuing discussion and analysis of the interview. The details of the microscopic analysis are organized into cycles of communicative transactions occurring in this two-person system. Calibration, stabilization, and the recurring communication of the patient's cycle of irritability, tension, and depression, and of accuracy compulsion are demonstrated. Nine assumptions or working principles are evolved from the study: (a) Imminent Reference–humans always communicate about themselves, about one another, and about the immediate context of the situation. (b) Determinism–at every available level of magnification of communicative detail, the details are culturally patterned. (c) Recurrence–crucial patterns of communication will not be manifested just once and these recurrent patterns occur in both the sender and receiver of signals. (d) Contrast and Reasonable Alternatives –in any given context the signal contrasts significantly with a small number of possible-but-not-transmitted alternatives. (e) Relativity of Signal and Noise–communication occurs simultaneously through many channels via many systems so that what appears to be noise in one channel may be a signal in another. (f) Reinforcement or Packaging–no matter how many contributing factors have been itemized there may be still others which qualify the interpretation. (g) Adjustment–continuous recalibration of communicative conventions is always to be expected in transactions between human beings. (h) Priority of Interaction–the "mind" of a person is the same thing as the totality of his communicative habits. (i) Forest and Trees–important properties of things and events are not invariant under changes of scale; therefore, microscopy may create distortions. Significant communicative signals which are readily identifiable are indicated in a check list which includes ambiguity of pronomial forms, unexpected directions of stress, abandoned directions of statement, variations in degree of smoothness of delivery, blendings of words, and variations of volume, register, tempo, and voice quality. *(M.R.)*

907. SHENSHEV, L. V., Common features of thinking in learning mathematics and foreign language. (Russian text) *Questions of Psychol.*, 4, 1960, 3-22.

This paper discusses the process of learning mathematical symbols in the light of some psychological features observed in the process of learning a foreign language. The notion of translation can be applied to the system of the mathematical symbolics. Translation plays an important role in the process of solving mathematical problems. At the root of both mathematical and linguistic translation is the transformation of the inner form of an external expression of thought. There is a similarity in the thinking activity involved in the linguistic and mathematical translation, which is based on the fact that some of the basic difficulties in learning mathematics and foreign language have the same psychological nature. Obviously, the difficulties of learning a foreign language are (a) those of learning the psychology of thinking in the given language, and (b) those of overcoming the psychological unity of sense and symbol. The same conclusion can be drawn with respect to the system of mathematical symbols. *(Author's summary)*

908. TRIANDIS, H., Cognitive similarity and communication in a dyad. *Hum. Relat.*, 13, 1960, 175-183.

An experiment was conducted concerning the effect of cognitive similarity (the degree to which persons orient toward significant aspects of their environment in similar ways) upon communication effectiveness in dyadic (two-person) relationships. The following hypotheses were tested: (a) The greater the communication similarity (similarity in the dimensions used by persons *A* and *B* during the actual process of communication) between two persons, the more effective will be the communication between them. (b) The greater the attribute similarity (similarity in the dimensions used by *A* and *B* when examining events in their environment) between two persons, the greater the communication effectiveness between them. Forty male undergraduates were randomly paired

to form 20 pairs. Care was taken to insure equality in average scholastic standing of the pairs. The subjects did not know each other before the experiment. *Attribute similarity* was measured by examining the degree to which the two members of a pair used similar dimensions (such as "intelligent-unintelligent," "good-poor," etc.) when answering predetermined questions concerning 12 triads of pictures of emotional expression. The pictures and questions were presented to each of the subjects in individual sessions. The lists of adjectives used by each subject were analyzed by two clerical assistants for comparative content and ratings were assigned to indicate the degree to which the two subjects used similar dimensions. *Communication Effectiveness* was based upon six "games" played by the pairs of subjects. The subjects were seated on opposite sides of a table, unable to see each other. In each game, each subject had two pictures, one of which was the same for both subjects. The task was to discover the common picture. Subjects were allowed to send as many messages to each other as they wished during a 12-minute period, but the mesages could consist only of a pair of polar-opposites. The measures of communication effectiveness were computed by giving points to indicate the degree to which the two subjects were in agreement and accurate in their guess as to the correct picture. *Communication similarity* was measured by analyzing the content of the messages used by the subjects during their communication in the games. Content-analysis was rated in exactly the same way as the lists for the determination of attribute similarity. It was found that a minimum of communication can take place even when the communication similarity is quite low. However, the higher the communication and/or attribute similarity, the greater the communication effectiveness of the dyad. *(H.L.L.)*

INTELLIGIBILITY

909. COHEN, A., The psychoacoustic and comfort properties of helmet communications gear. *Quartermaster Research and Engineering Center*, TR EP-123, Jan., 1960.

Sound suppression, speech intelligibility, and comfort properties of the standard communications system used in the Helmet, Combat Vehicle Crewman's, T-56-6, were compared with those of an experimental system (RCA "Quiet Ear" kit). Threshold-shift procedures showed that helmets fitted with the RCA gear gave an average of 11 db more suppression for frequencies 1000 to 8000 cps than those fitted with the standard system. This difference, however, was reduced to 5 db in the critical low-frequency range of 250 to 500 cps, while both helmet assemblies provided negligible suppression at 400 cps. The RCA system, despite its increased attenuation, was not believed capable of reducing the intense low-frequency components of vehicle noise to safe levels. Moreover, both systems under test greatly reduced the middle- and high-frequency sounds which are less intense in vehicle noise but are more critical to the perception of speech sounds in the ambient environment. Speech intelligibility with the RCA kit was greater than with the standard item, as determined in a field test using M-48 tanks. Subjective appraisals of comfort, however, showed no preference for either system. The helmet shell showed the greatest limitations in wearability and compatibility with operational tasks. *(Author's summary)*

910. CORNUT, G., and LAFON, J. C., Etude acoustique comparative des phonèmes vocaliques de la voix parlée et chantée. (A comparative acoustic study of the vocalized phonemes of the speaking and singing voice.) *Folia Phoniat.*, 12, 1960, 188-196.

The study is undertaken with the use of a Sonograph to produce sound spectrograms which are used to examine the intelligibility of vowels. In classical singing it is inevitable that the vowels should have an acoustic structure different from that they have when spoken. For speech, intelligibility is the essential quality. For singing, esthetics is essential and phonetic precision in the shape of the resonating cavities is sacrificed; the larynx becomes primary for the singing voice. *(J.B.R)*

911. HARRIS, J. D., Combinations of distortions in speech. *A.M.A. Arch. Otolaryngol.*, 72, 1960, 227-232.

Because the physical cues present in a speech signal are complex and overlapping, the listener has a wealth of cues of frequency, intensity and time, from any set of which he can distinguish a phoneme among others in a confusion matrix. The author proposes the term *Multiple-cueing* for the simultaneous presence of physical stimuli, any one set of which can carry intelligibility. He suggests that the word redundancy be restricted to denote the idea that if a word is missed in a sentence there are enough cues and restrictions furnished by syntax and context to give the listener a good idea of the missing item. It is not possible to discover the effect of one physical cue by eliminating it, because when this is done intelligibility may be only slightly affected and one may arrive at the false conclusion that the cue in question is of only slight importance to speech perception. An experiment designed to explore the effects of multiple-cueing must eliminate progressively one, two and more cues simultaneously until intelligibility is reduced to, or very nearly to, zero. With this in mind the following experiment was devised. A speech sample was selected consisting of ten equivalent lists of ten sentences developed at CID. Speech was distorted by asking the talkers to read (a) as rapidly as possible while still enunciating each syllable; (b) with a swimmer's nose clamp on; and (c) while eating a submarine sandwich. In addition, two kinds of laboratory distortion were used, reverberation of four seconds and 50% duty cycle interruptions at the rate of eight per second. Pairs of distortions were arranged by having the talkers combine nasality with speed, with eating and then speed with eating. The reverberated and interrupted conditions were combined with each other and each with nasal, speeded, and eating while talking speech separately. Five single sources of distortion and ten pairings by each of four talkers resulted in a total of 60 lists. Listeners consisted of groups of at least 25 young men with normal hearing and average or better intelligence. Each group received only a few lists with no repetitions. Lists were administered at approximately 60 db SPL. Scoring was on the basis of the individual word with 2% for each word right. *Effect of single distortion.* Fourteen single-distortion lists were given to a group of listeners, the lists sampling all talkers and distortions. Average scores per list ranged from 88.9% to 99.2%. "From the fact that the interrupted lists throw away exactly half of the signal, yet intelligibility remains high, it can be deduced that the combination of language redundancy plus multiple-cueing gives a total safety factor of roughly 50%." *Effect of two sources of distortion.* When two sources of distortion were combined the resultant intelligibility averaged about 50 ± 30%. It was found that the effects of distortion over which the talker had no control (interruption and reverberation) were fairly constant from person to person and since the speech samples used were fairly well equated for redundancy, it can be concluded that the particular characteristics of a talker's voice will largely determine the effect of two types of distortion. For some talkers speech intelligibility remained high with two sources of distortion but was reduced markedly when a third source was introduced. In summary, the data show that several sources of voice distortion commonly found in everyday life are similar in that they each eliminate roughly one quarter of the multiple-cues (frequency, intensity, time) available for word intelligibility. The ear apparently can withstand the loss of 25% of the multiple-cues. But when two sources are combined, the loss of multiple-cues do not overlap, resulting in a loss of approximately one-half of the multiple-cues and a drop in intelligibility to approximately 50%. *(J.J.)*

912. KRYTER, K. D., Human engineering principles for the design of speech communication systems. *AF Command and Control Devel. Div.*, Tech. Rep. 60-27, Hanscom Field, Bedford, Mass., Aug., 1960.

The AI (Articulation Index), a method of predicting the speech intelligibility of a system from physical measurements of speech and noise, is made more useable by a number of corrective graphs which enable one to account for peak clipping, vocal effort, intermittent noises, reverberation time, lip reading cues and noises with steep spectrum slopes. *(J.C.W.)*

913. POLLACK, I., Message uncertainty and message reception. II. *Lang. Speech*, 3, 1960, 174-177.

The paper describes a continuation and expansion of a study first reported in *J. acoust. Soc. Amer.*, 31, 1959, 1500-1508. In the previous paper, the investigator found that the accuracy of message reception is relatively independent of the size of the message ensemble if the number of response alternatives is held constant, and that the accuracy of monitoring performance is independent of the number of irrelevant response alternatives. The present study was undertaken to determine whether the same generalizations are warranted in the case where the message and response alternatives are randomly chosen from the English language. In the present study, two types of listening tests were employed. In the "one-from-two-alternatives" test, the listener was presented with a word in noise under specified S/N conditions, and had to decide which of two entries on a card had been read. In the "one-from-many-alternatives" test, the listener had to decide whether the recorded single entry on the card had been read, or whether any other English word had been read. Only a small difference was found in favor of the one-from-two-alternatives tests. The ideal observer, as defined within signal detection theory, should perform substantially better in the one-from-two-alternatives tests; the theory of signal detectability predicts a three db difference in favor of one-from-two tests for the ideal observer on the assumption of equally likely orthogonal messages. It is concluded that the performance of the human observer, contrary to the performance of the ideal observer, does not suffer materially when called upon to monitor one from an extremely larger number of alternatives rather than to select one from two alternatives. *(I.L.)*

914. SPOGEN, L. R., SHAVER, H. N., BAKER, D. E., and BLOM, B. V., Speech processing by the selective amplitude sampling system. *J. acoust. Soc. Amer.*, 32, 1960, 1621-1625.

Selective amplitude sampling is a speech processing technique in which the input speech waveform is sampled at x the times of its maxima and minima. The original wave is reconstructed from its samples by means of a box-car circuit followed by suitable filtering. The maxima and minima are determined from the zero crossings of the differentiated speech wave. Center clipping is employed to provide amplitude discrimination and a reduction in the average sampling rate. The intelligibility of speech processed by the system is compared with that for clipped differentiated speech and the original speech. "Quality" tests attempted to measure the ability of listeners to distinguish between words processed by the selective amplitude sampling system and a system in which the original words were filtered to a pass band of 300 to 3000 cps. *(Authors' summary)*

PHONETICS

915. ABEL, J., Bloomfield's final clusters. *Quart. J. Speech*, 46, 1960, 411-414.

A schematic interpretation of Bloomfield's groupings of consonant clusters occurring in the final positions of words is presented in an annotated table. The consonants which appear as main finals are included in the upper ordinate; the post finals [t, d, s, z] on the lower ordinate are repeated to coordinate with all final consonants they would follow in English, e.g., [pt, ps]. Pre-final and 2nd pre-final consonants, e.g., [ks, rp] form the vertical columns. This system of classifying consonant clusters is offered as an improvement over D. B. Strother's schematic which appeared in *Quart. J. Speech*, 1959. *(H.L.L.)*

916. FÓNAGY, I., Die Redepausen in der Dichtung. (Speech pauses in poetry.) *Phonetica*, 5, 1960, 169-202.

Metrical pauses are considered in this paper as substitutes for speech pauses. The antinomy of the (abstract) meter and the (concrete) verse rhythm, corresponding to the opposition between language and speech, enables the poet to introduce into the (written) verse typical speech phenomena such as the shifting of stress, the omission of sounds or syllables, the modification of vowel color, unpredictable speech pauses, etc. As a consequence, the written verse contains information which in other circumstances is only imparted orally. In everyday life speech pauses have a delimitative and expressive function (according to Bühler: *Ausdrucksfunktion*). In poetry they participate with other prosodic phenomena in the description of things

meant (*Darstellung*). The great variety and importance of speech pauses in poetry is illustrated by the phonetic analysis of a Hungarian poem recited by a well-known artist. By means of quantitative phonetics the creative role of the performer could be appraised and customary explanation of written poems completed by the analysis of oral interpretation. *(Author's summary)*

917. HÁLA, B., Autour du problème de la syllabe. (The problem of the syllable.) *Phonetica*, 5, 1960, 159-168.

The author discusses some of the major problems relating to the theory of syllable as advocated by Professor Rosetti. He is rather doubtful of Professor Rosetti's classification of phonemes into "phonèmes à air" and phonèmes sans air." Furthermore the author disagrees with Professor Rosetti's statement that the theory of syllable must be based on the articulatory movements of the organs of spech and that sonority is only a secondary element. The author's conception of the syllable is the following: the syllable is a separate act of phonation enabled by the transition from the stricture (closure or narrowing) of speech organs to the aperature (release of passage for voice). The whisper, which Prof. Rosetti mentions as against this view, represents a different phonic level of speech having its proper rules that cannot be transferred mechanically to the spoken speech. The author comes to the conclusion that Prof. Rosetti's view of the syllable as owing its existence to the presence of air, is untenable, the *nature of the syllable consisting solely in the presence of the voice. (Author's summary)*

918. HARGREAVES, W. A., A model for speech unit duration. *Lang. Speech*, 3, 1960, 164-173.

The paper reports results of a study of speech unit durations. A variety of speech samples was analyzed. It was found that in spontaneous everyday conversation, mean speech unit durations were relatively small (2.58 sec within a specified experimental situation); in a discussion situation, the mean duration was considerably greater (4.26 sec); whereas in a recorded interview, where the subjects were giving an extensive, factual description in response to brief questions interspersed by the interviewer, the speech unit duration was longest (5.95 sec). In the free interaction situation, there was considerable "start effect"–speech units shorter than the approximate duration of a monosyllabic word were extremely rare, and the curve constructed to represent the mean durations of speech utterances exhibited a decided mode at that point. The author suggests a mathematical model for speech unit duration that provides a workable approximation to the free everyday conversation situation. The model is a version of the exponential decay process. In its simplest form, it assumes that for a person who is emitting speech at some point in time there is some fixed probability that he will stop speaking in the next time interval, and that this probability is independent of how long he has been speaking. This simple version of the model is adequate for a gross approximation to speech unit durations. A more exact model is also outlined which takes account of the fact that extremely short speech units lasting only a small fraction of a second are relatively less likely to occur and that there tend to be small shifts in expected speech-unit duration within a particular speech sample, depending on situational factors. *(I.L)*

919. HÖFFE, W. L., Über Beziehungen von Sprachmelodie und Lautstärke. (The relationship of speech "melody" and "sound intensity.") *Phonetica*, 5, 1960, 129-158.

In the introduction of this paper basic problems are discussed concerning the methods of investigation in phonetics and the evaluation of phonetic data. Then some opinions about questions of "melody" and "sound intensity" are quoted. In the next part electro-acoustical recordings of expression-bearing speech utterances (e.g., joy, defiance, anger) are explored for the relations between the two components of melody and intensity. Finally the most important outcomes are listed together. *(Author's summary)*

920. NASR, R. T., Phonemic length in Lebanese Arabic. *Phonetica*, 5, 1960, 209-211.

Length is the *relative* duration of time in which a sound is produced. If changes in the relative length of sounds produce

changes in meaning, then length is phonemic. In Lebanese Arabic, length is a segmental feature of sound modification because it applies to separate consonants and vowels. It is also phonemic because it produces changes in meaning. *(Author's summary)*

921. TOBIAS, J. V., On "American English phonemes." *J. acoust. Soc. Amer.*, 32, 1960, 1080.

The author of the article that provoked the response by Prof. Hamp in the same issue of this journal replies by saying that the two points of view are not dissimilar in major respects. *(B.A.L.)*

922. WANG, W. S-Y., and CRAWFORD, J., Frequency studies of English consonants. *Lang. Speech*, 3, 1960, 131-139.

An explanation was sought for the disagreement among the various frequency counts which have been made of English consonants. The data for a set of ten different frequency counts were converted to IPA symbols and compared by means of the coefficient of linear correlation. In the interpretation of the results, the following four factors were considered: (a) the size of the sample, (b) the general nature and content of the sample, (c) the dialect from which the sample was collected, and (d) the method of transcription of the sample. It was found that sample size is not of great importance: a high correlation was found between a sample of 6000 and one of 400,000 consonants. The relative frequency of the consonants was not materially affected by the style of literary content of the sample. However, sampling from a dictionary and sampling from continuous texts were found to yield different results. Most markedly different was the frequency of /ð/, which was the least frequent consonant in a study based on sampling from a dictionary, but the sixth most frequent consonant in four studies based on continuous texts. Except for /r/, the consonant frequencies did not vary significantly among the dialects on which the ten frequency counts were based. This was interpreted as a property of English, where dialectal differences are manifested mostly in the vowels. Differences in the method of transcription were found to result in differences in the relative frequency of occurrence which were not inter-convertible and consequently not comparable. Two studies showed a high correlation among themselves, but relatively low correlation with the other studies. The Trager-Smith transcription used for these two studies had resulted in a greater occurrence of the consonants /w/, /y/, and /h/, as well as an overall percentage of consonants that was markedly higher than that found in the other studies. The paper dealt with first order probabilities; i.e., the relative frequencies of phones. In the authors' opinion, higher order probabilities (sequential probabilities) are more valuable for application in mechanical speech recognition. They suggest that in statistical studies aimed at establishing such higher order probabilities the factors found to cause discrepancies among various frequency counts be given proper consideration. *(I.L.)*

923. WOLF, S. A., Zur Frage einer normierten Zigeunersprache. (Basic Romani). [On the question of a basic Gypsy language. (Basic Romany)], *Phonetica*, 5, 1960, 204-209.

Recently B. J. Gilliat-Smith has discussed the construction of "Basic Romani" as a possible means of communication among the Gypsies using highly divergent Romany dialects. Though there is no lexical hindrance to basic Romany, the practical experiment would meet with greatest phonetic difficulties. To overcome them, just as the very learning of basic Romany, [one] would be baffled by the illiteracy of most of the Gypsies. *(Author's summary)*

Semantics

924. BENDA, C. E., Language, consciousness, and problems of existential analysis (daseinsanalyse). *Amer. J. of Psychother.*, 14, 1960, 259-276.

This article discusses language, its structure, its meaning and its relation to reality preliminary to, and in conjunction with, a discussion of consciousness and of existential analysis. The author shows how the development of consciousness is dependent upon the "language world" into which the individual is born and which he has introjected. He further states that reality as the individual knows it only becomes

meaningful through his interpretation by language of the reality with which he comes into contact. Rather than developing language, the child grows into the "language-world" about him. He can only interpret that which he experiences through language. Semantically, the child will perceive reality according to the language he grows into. If an individual does not acquire language he cannot pass beyond emotional states and instinctual experiences; he cannot conceptualize. Imagery, which is activated by a concept is objectified by language. With language, the individual is able to relate objectively to others and to the world around him. *(J.G.S.)*

925. LILLYWHITE, H., Disorders of communication—a broader concept. *J. Commun.*, 10(2), 1960, 64, 99.

A need is expressed for the audiologist and speech pathologist to provide assistance to so-called "normal" speakers who are "unlisteners," "oververbalizers," or "allnessics." The study of disordered communication, regardless of the causes, could and should use clinical skills. *(J.B.R.)*

926. MOSER, H. M., The evolution and rationale of ICAO word spelling alphabet. *Ohio State Univ. Res. Foundation* (AFCRC TN 58-55), [1961].

This report lists over 180 word-spelling alphabets collected from various countries, military services, utilities, etc. A general introduction and history of word-spelling alphabets is also included. *(Author's summary)*

927. MOSER, H. M., and DURHAM, R. E., An examination of the spoken vocabulary used in air traffic control. *Ohio State Univ. Res. Foundation*, TR 55, (AFCRC TN 59-73), Nov. 1959.

Word counts were made at three domestic and two international airports located in high density traffic areas in the United States. Consecutive segments of two-way radiotelephone messages were analyzed for type-token ratios. Over 50% of the vocabulary used in Air Traffic Control is contributed by 25 words, while around 70% of the vocabulary is contributed by 50 words. In general, there are more differences among the several control facilities (Tower, Ground Control, and Approach) of one airport than among the vocabularies of the same type of control facility at different airports. *(J.C.W.)*

SPEECH AND LANGUAGE DEVELOPMENT

928. BROWN, R., and BERKO, J., Word association and the acquisition of grammar. *Child Develpmt*, 31, 1960, 1-14.

In a word-association test adults usually provide response words belonging to the same part of speech as the respective stimulus words whereas very young children usually provide responses differing in part of speech from the stimuli. It is hypothesized that the changing character of the child's word associations is a consequence of his gradual organization of vocabulary into the syntactic classes called parts of speech. To determine the degree to which S has accomplished this latter task a Usage Test was designed. In this test a new word is used so as to indicate its part-of-speech membership and S is then asked to create sentences using this new word. A performance is scored as correct if S has used the word in ways permitted by its part-of-speech membership. Four groups of Ss (adults, and first, second and third grade children) were given the Usage Test and also a Word Association Test and it was found that the tendency to give associations belonging to the part of speech of the stimulus word was closely related to correct scores on the Usage Test. The performances are both manifestations of the child's developing grasy of syntax. *(Authors' summary.)*

929. DOLCH, E., Needed vocabulary. *Elem. Eng.*, 1960, 530-534.

A list of 684 "needed extra words" in writing children's stories is presented. The list was developed by tabulating all words used in the first 15 of the *Basic Vocabulary* books and eliminating those already "permitted" (considered to be within a young child's reading vocabulary), those which appeared in only one book or one type of book, and all words not on the list of *First Thousand Words for Children's Reading*. The result was a list of 684 words which actual experience had shown were needed for simple story telling. *(H.L.L.)*

930. GODA, S., Vocal utterances of young moderately and severely retarded

nonspeaking children. *Amer. J. ment. Def.*, 65, 1960, 269-273.

The sound utterances of seven moderately retarded children and one severely retarded child were recorded individually while the child played for one hour either alone or while the child was stimulated with sound by the examiner. The eight children illustrated the four stages of prespeech development described by Berry and Eisenson: babbling, lalling, echolalia and first words. These four stages were broken down to include five levels: (a) isolated sound utterances without apparent auditory awareness, (b) syllabic chain utterances made up of vowels and consonants without apparent auditory awareness, (c) isolated sound and syllabic chain utterances made up of vowels and consonants without auditory awareness of self-produced sounds and the frequent repetition of certain favorite sounds and sound discrimination, (d) isolated sound and syllabic chain utterances with auditory awareness of self-produced sounds and the sounds of others, and the imitation of the sounds of others, (e) acquisition of first words. The implication is that stimulation methods should be consistent with the level of development. Examples are given. Prognosis for speech development for each child in the study is discussed. *(N.J.C.)*

931. HINZE, H. K., Speech improvement: an overview. *Elem. Sch. J.*, 61, 1960, 91-96.

Reasons for beginning speech improvement early in the child's school life are given. Methods for drill and teaching of sounds are reported and suggestions are given to make drill pleasant for the child. The use of games is considered and certain weaknesses in this approach are discussed. Because the ultimate objective of training is normal speech production in conversation, methods which help achieve this objective are reported. *(N.J.C.)*

932. JONES, W. R., A critical study of bilingualism and nonverbal intelligence. *Brit. J. educ. Psychol.*, 30, 1960, 71-77.

Suggesting that bilingualism need not be a source of intellectual disadvantage for school children and that socioeconomic status of linguistic groups requires consideration, recent research comparing school achievement of English monoglots and Welsh bilinguals is surveyed and reanalyzed. Reanalysis of the date of three recent studies suggests that monoglot and bilingual groups of corresponding social economic status do not differ significantly in nonverbal intelligence. The importance of including socioeconomic factors in any comparative study of monoglot and bilingual children is stressed. The limitations of a language questionnaire are pointed out. *(Child Develmpt Abst. Bibl.)*

933. LEWIS, D. G., Differences in attainment between primary schools in mixed-language areas: their dependence on intelligence and linguistic background. *Brit. J. educ. Psychol.*, 30, 1960, 63-70.

Differences in attainment in English and arithmetic of 375 10-year-olds in 16 primary schools in mixed-language areas of Wales are studied with respect to differences in both intelligence and linguistic background. School attainments tended to increase with intelligence, though not regularly; and the school differences in intelligence did not account fully for the differences in attainment. Generally, the attainment of schools with pupils of a strongly Welsh background—i.e., bilingual pupils—was lower than those of other schools, this tendency being strong in English and slight in arithmetic. It is concluded that a bilingual environment may be regarded as an important factor with respect to primary-school differences of attainment in English which cannot be accounted for by intelligence. *(Author's summary)*

934. Partridge, L., Theory vs. clinical practice. (Speech and hearing therapy corner). *West. Speech*, 24, 1960, 229-232.

Several instances of apparent contradictions between statements made in textbooks or in research articles and the results of the writer's clinical experiences are described. These conflicting areas include: (a) suggestions in textbooks that blends not be taught early preschoolers in contrast to the therapist's experience that most kindergarteners and first graders do make most sounds correctly; (b) apparent differences between the average age for obtaining mastery of sounds noticed by the therapist and that given in texts; (c) the lack of relationship between physical etiological factors and the

speech pattern among dyslalias, dysphonias, and delayed speech; (d) disbelief in the "nonreaction" type of treatment as the sole answer in the treatment of primary stuttering. *(H.L.L.)*

935. SOKOLOV, A. N., Vnutrennaia rech pri izuchenii inostrannykh iazykov. (Inner speech in foreign language studies.) *Voprosy Psikhol.*, 6, 1960, 57-64.

Discussed in the present paper are the results of an electromyographical investigation of the latent articulation ("inner speech") in adult subjects while silently reading texts in their native and in foreign languages. The author points out that there is a dependence of the electrical activity of the speech muscles upon the grammatical and sense complexity of the texts presented and upon reading habits. With good reading habits the muscular efforts of the speech apparatus are reduced. This, however, implies that foreign speech articulation should be extremely well reinforced in the course of the preceding practice. According to the author, the same refers to the auditory perception of foreign speech. These conclusions are in good agreement with the results recently obtained by K. Faaborg-Andersen and A. W. Edfeldt. *(Author's summary)*

936. WOOD, N. E., Language development and language disorders: a compendium of lectures. *Monogr. Soc. Res. Child Develmpt*, 25(3), 1960.

A compilation of nine selected lectures originally presented at a symposium sponsored by The Cleveland Hearing and Speech Center as part of a new curriculum in Language Pathology at Western Reserve University. Includes a thorough explanation of the processes involved in the development of language and speech by Dorothea McCarthy and a discussion of language disorders, particularly aphasia in children, by Nancy E. Wood. The fields of pediatrics, neurology, and psychiatry are competently represented by Robert D. Mercer, discussing organic brain syndromes and speech disorders; Lowell G. Lubic, describing the neurologic evaluation of the nonverbal child; and Earl D. Loomis, contrasting and comparing autistic and symbiotic syndromes. Some current procedures used in psychological assessments of nonverbal children are challenged by Melvin A. Allerhand; Margaret C. Lefevre introduces some provocative statements concerning language problems of children with cerebral palsy; and a stimulating discussion of language development of mentally retarded children is presented by T. Ernest Newland. New thoughts concerning adult aphasia are crystallized by Jon Eisenson in his discussion of when and what is aphasia. This compendium does not purport to answer all questions related to language development or the various problems that can impede communication. Rather, these lectures attempt to integrate basic information, stimulate thought, and postulate questions concerning this area of study. *(Author's summary)*

937. WORTIS, J., Mental retardation in the Soviet Union. *Children*, 7, 1960, 219-222.

Incidence of mental retardation in the USSR, and Soviet views and definitions of retardation are given. The Soviet's unacceptance of psychometric testing is explained. Research being conducted by Luria and Sokolov is mentioned. Certain research is concerned with measuring and recording attentiveness by studying shifting changes in the caliber of the blood vessels of the scalp and fingers. By this physiological method it is possible to record responses of children to words related by sounds or meaning and it is possible to study steps through which language development proceeds in normal and defective children. The interest of Luria in the organizing role of speech in the development of thinking and abstract concepts in children is reported. Reference is made to teacher preparation, teaching procedures, educational and vocational placement. Psychotherapy, speech therapy, and physiotherapy are reported as parts of the training programs. *(N.J.C.)*

938. ZHUIKOV, S. P., Development of grammatical skills in junior school children. (Russian Text), *Questions of Psychol.*, 4, 1960, 35-44.

A successful learning of grammar and spelling by school children implies the formation of a number of generalized skills, in particular, the skill of making proper use of formal grammatical questions, the ability to compare linguistic forms

and meanings, to compare the notions belonging to different categories, to consider linguistic phenomena in different aspects. As shown by the author, these skills can and should be developed in children in the initial period of language learning at school. By indicating the ways for their development, this paper lays down a basis for a better progress of school children in the Russian language. *(Author's summary)*

VOICE

939. BONAVIDA, A., Teoria fisica de los sonidos vocales. (Physical theory on vocal sounds.) *Acta oto-rino-laringol. Ibero-Amer.*, 11, 1960, 448-463.

The author discusses the spectral analysis of speech sounds, relating the pulmonary, trachael, nasopharyngeal and buccal impedances and capacitances to mechanical and electrical models. He compares vocal formants to those of musical instruments. *(M.S.W.)*

940. FRICK, J. V., Incidence of voice defects among school-age speech defective children. *Penn. Speech Ann.*, 17, 1960, 61-62.

A questionnaire study of 50 public school speech programs representing 37,224 children in therapy included only 2.01% with voice problems. Over half of the therapists believed there were twice as many children with voice problems in their schools than they could report. An estimate of 5% appears to be defensible as an incidence figure. This agrees with the White House Conference figures, but is lower than others reported by Milisen and Van Riper. *(A.J.B.)*

941. POLLACK, I., RUBENSTEIN, H., and HOROWITZ, A., Communication of verbal modes of expression. *Lang. Speech*, 3, 1960, 121-130.

The study explores the possibility of recognizing the verbal expression of the talker under different conditions of presentation. Four talkers read neutral sentences, employing sixteen modes of expression (such as "happiness," "fear," "boredom," "disgust"). Listeners attempted to identify the intended mode of expression, drawing their responses from a limited number of alternatives. The results appeared to be influenced by four conditions of presentation in the following manner: (a) Successive reductions in the number of response alternatives increased the average correct reception score from about 55% to 75%. (b) At extremely poor SN ratios, mode recognition was somewhat superior to the recognition of short sentences. At more favorable SN ratios, sentence recognition was superior to mode identification. (c) Whispering did not affect the identification of the modes of expression at low S/N ratios. At higher S/N ratios, whispered tests gave lower scores than voiced tests. (d) Periodic sampling had a greater adverse effect on mode recognition than on sentence recognition; per cent correct mode recognition was approximately linear with the log of the sample duration. The authors concluded that high levels of correct recognition may be achieved for a defined small number of modes of verbal expression for a defined small number of talkers by a listening crew familiar with the talkers' modes of expression. Reasonably high levels of recognition may be achieved with sharply reduced acoustical information (low S/N ratios, whort samples, or whispered speech). *(I.L.)*

942. SMITH, S., The electro aerometer. *Speech Pathol. Ther.*, 3, 1960, 27-29.

A new device for measuring variations in air volume flow is described. Basically it is a tube with one-way valves at either end and a hole between for the subject to breathe through. One valve opens only on inspiration and the other only on expiration. Lights inside the tube activate photoelectric cells through the opened valves, generating currents proportionate to the volume of air moved. The direct writing recorder can use up to four channels and speeds from 1cm/sec to 100 cm/sec. Eleven figures show the equipment diagram and examples of recordings. *(A.J.B.)*

943. WINCKEL, V. F., Die psychoakustische Bewertung des Spektrum. (The psychoacoustic evaluation of the vocal spectrum.) *Folia Phoniat.*, 12, 1960, 129-136.

Communication studies are cited to indicate that only a relatively restricted frequency range (as little as one-third) is necessary for the understanding of speech. Secondary effects are presumed to carry

an adequate amount of semantic and esthetic information. Psychoacoustic analysis and reconstruction of the fundamental on the basis of a "residuum effect" is suggested as a technique for evaluation. *(J.B.R.)*

SPEECH DISORDERS

Aphasia

944. BARRY, H., Training the young aphasic child. *Volta Rev.*, 62, 1960, 326-328.

In training the young aphasic child there are three important considerations: (a) the physical set-up (not included here), (b) corrective therapy for psychomotor dysfunctions and disturbed behavior, and (c) the development of language itself. The author discusses his approach to these problems. *(J.B.M.)*

945. BENTON, A. L., and JOYNT, R. J., Early descriptions of aphasia. *A.M.A. Arch. Neurol. Psychiat.*, 3, 1960, 205-222.

An analysis of the literature on aphasia from the Hippocratic writings to 1800 shows that a substantial amount of clinical knowledge had been gained by the beginning of the 19th century. Most of the clinical forms of aphasia and certain common characteristics of aphasic disorders had been described, but sensory aphasia had not been recognized as a specific entity. 50 references. *(Rehab. Lit.)*

946. BUTFIELD, E., Acquired receptive dysphasia. *Speech Pathol. Ther.*, 3, 1960, 8-12.

Receptive dysphasia is described on the basis of extensive clinical experience. Linguistic disorders apparent in all dysphasias are word finding difficulties, recurrent utterances in severe stages linked with verbal perseveration verbal paralexia, paragrammatism, short abstract word difficulties, retention and auditory memory span limitations, deterioration of language ability with fatigue, anxiety or frustration. Three types of receptive dysphasias are discussed. In *receptive dysphasia* involving temporal lobe defects, four stages of improvement are differentiated. Jargon is prominent early but is progressively inhibited with improvement, while word-finding defects become more apparent. More accurate writing than speech is a good prognostic sign. *Central* (or parietal lobe) *dysphasia* shows no jargon and extremely limited utterances, with many language and nonlanguage defects. Patients usually have proprioceptive losses in right limbs. Even intensive reeducation produces only slight improvement. *Visual receptive dysphasia*, the occipital lobe syndrome, shows right homonymous hemianopsia, asymbolia, simultaneous agnosia, slight word-finding difficulty and high grade auditory receptive loss. Principles for treatment are suggested. Favorable environment can control the catastrophic reaction. *(A.J.B.)*

947. CASTLEMAN, B., and KIBBEE, B. U., Case records of the Massachusetts General Hospital. *New Eng. J. Med.*, 263, 1960, 854-860.

A 56-year-old sign painter entered the hospital because of a severe headache. One of his symptoms was considerable jargon aphasia. The results of an intensive physical examination are enumerated. With magnesium sulfate, reserpine and barbiturate therapy the headache was relieved and there was no longer jargon aphasia, although he often hesitated in finding the proper words. The patient was discharged on the thirteenth day and was admitted again seven weeks later. Sixteen days later the patient died. Differential diagnosis: the involvement of the central nervous system accounted for many of the findings on entry to the hospital. The development of jargon aphasia indicated serious damage to the brain substance and, although this condition did clear, the patient continued to have difficulty with speech during the early days of the first admission. Pathological discussion was carried on by several physicians with the part of the ultimate anatomical diagnosis of malignant nephrosclerosis and hypertensive encephalopathy. *(M.N.)*

948. Di CARLO, L. M., Differential diagnosis of congenital aphasia. *Volta Rev.* 62, 1960, 361-364.

This paper presents brief definitions of congenital aphasia. The author describes a congenitally aphasic child as "different from other groups in that children who are language retarded are unresponsive to sound, delayed, arrested, deteriorated, vocabulary, speech, and language develop-

ment, usually culminating in a breakdown in the communicative process." A group of 67 children referred to the Syracuse Hearing and Speech Center who had already been diagnosed as congenitally aphasic during the years 1955 to 1956 were reexamined and instructed over a period of time. Their behavior was observed very closely by two psychologists who administered psychometric tests. Each child also had neurological and electroencephalographic examinations. Play and conditioned audiometry, localization test, G.S.R., and other audiometric techniques were utilized to determine auditory sensitivity. Didactic-diagnostic techniques utilizing speech materials were employed for testing different auditory capacities, association, and expressive potentials. It was found that only four of the group had aphasoid characteristics as defined by the author. Of the remainder, 17 had I.Q.'s below 58, 11 had I.Q.'s from 60 to 75, 20 were emotionally disturbed with normal intelligence, and 15 had defective hearing. The author emphasizes the need for careful appraisal of behavior of these children and strongly propounds the concept of multiple deficiencies. He also emphasizes the need for examination and constant reappraisal on a temporal continuum. *(J.B.M.)*

949. FORD, E. S. C., ROBLES, C., and HARLOW, R. C., Psychotherapy with child psychotics. *Amer. J. Psychother.*, 14, 1960, 705-718.

One of two cases presented in this article is that of a nine-and-a-half year old mute, autistic girl who had been diagnosed as deaf at eight months and again at three years and at the age of seven as aphasic. Shortly after the diagnosis of aphasia was made, more intensive examination was carried out and the diagnosis was reversed to that of severe psychological disturbance. There is an account of the child's progress in 90 sessions of psychotherapy. The authors posit a rationale for the necessity of the therapist to exert firm control over the acting-out impulses of the child until the child can introject "those aspects of the therapist's ego which protect him" and can begin to control the acting-out impulses himself. The psychotherapeutic goal is one of assisting the child to acquire control over his instincts. *(J.G.S.)*

950. GENTILI, C., LOPERFIDO, E., and EUTIZI, D., Della prosopoagnosia. (A report on "prosopoagnosia.") *Riv. Oto-Neuro-Oftalmol.*, 35, 1960, 560-600.

The inability to recognize faces, which Bodamer named "prosopoagnosia" in 1947, was isolated by the same author from the general picture of visual agnosias on account of a supposed pathogenetical specificity. In many of the reports on the subject which followed the one just mentioned, this distinction was kept and, though with interpretative variations, the disturbance was included in the classical concept of "agnosia" that attributed to it an inability to recognize, without sensory loss. In this report the authors describe five patients with "prosopoagnosia" in whom analogous disturbances were also present, concerning identification of objects and colors, understanding of drawings and correctness in reading. In two of them a cerebral atrophy was radiologically demonstrated in the parieto-occipital region, in one a diffused atrophy. In the first four cases a defect of the visual field was present, which was ascertained by techniques of investigation more adequate and reliable than those of routine. On the basis of these facts and keeping in mind the contribution given by the study of "Funktionswandel" and the theory of "spatial summation" to the analysis of the gnosic perceptive process, the authors reconsider the classical concept of "agnosia" in distinguishing for its two pathogenetical modes: the first is the distorted information due to an impairment of sensory afferences ("agnosia by amorphosynthesis"), the other a symbolic conceptual dissolution ("agnosia by asymboly"). On the basis of the aforementioned distinction the authors are of the opinion that a classification of "agnosias" according to their different types is superfluous. Therefore, also "prosopoagnosia," in spite of the peculiarity of the "object," neither occupies a peculiar place nor represents a problem of its own since, as the cases reported well demonstrate, it may appear either as a defect of morphosynthesis or as an aspect of a more general symbolic dissolution. *(Authors' summary)*

951. KNIGHT, G., 330 cases of restricted orbital cortex undercutting. *Proc. royal Soc. Med.*, 53, 1960, 728-732.

The author discusses the background, disadvantages and advantages of a full "standard" leucotomy. He describes in detail the surgical procedures he utilized. All of the patients were personally studied both pre- and post-operatively. One of the cases described concerned a woman who had been confined in a mental hospital for three years without spontaneous speech. If spoken to, she would answer only, "I don't know, what is the use, I am dead." She was operated on in October, 1956 and left the hospital on December 12, remarkably relieved. Her recovery is regarded by her family as being 100%. A conclusion of the author is that the effect of operation depends upon the site of the lesion rather than its extent and that operation at this site does relieve certain of the more severe cases without the unfavorable personality defects left by the full standard operation. Also, in certain cases, this operation can relieve after a few weeks symptoms which have persisted for many years. *(M.N.)*

952. MORLEY, M. E., Developmental receptive-expressive aphasia. *Speech Pathol. Ther.*, 3, 1960, 64-76.

Five cases of receptive aphasia (first noted as delayed speech, hence considered developmental) are described in detail and contrasted with varities of hearing losses. All areas of language communication were defective, and spoken language was either jargon or limited by paraphasia, perseveration and paragrammatism. Articulatory defects were not common. Visual perception might be good, but reading lacked full comprehension. Writing showed the same construction errors as in speech. Response to therapy was limited, with handicapping disabilities persisting into adult life. *(A.J.B.)*

953. PENFIELD, W., and ROBERTS, L., Speech and brain mechanisms. Princeton, New Jersey: Princeton University Press, 1959, 286 p.

This monograph is reported to be the outcome of ten years of "carefully planned study of the neurological mechanisms of speech." The principal purpose of the study is to obtain new information on the speech mechanisms of the brain. The data were obtained from surgical operations upon the dominant hemispheres of 273 seizure cases and upon the nondominant hemispheres of an equal number. Special examinations were carried out on 72 of these patients in order to study evidences of dysphasia. Two chapters are devoted primarily to a discussion of the general physiological divisions and functions of the brain. There is strong evidence that a "centrencephalic system" exists in the brain which is situated within the higher brain stem, possibly the thalamus. The highest level of cephalic integration takes place in this system, but its function is never divorced from some areas of the cortex, especially certain portions of the temporal lobes and the anterior portions of the frontal cortex. Under normal circumstances, consciousness accompanies the combined activity of the centrencephalic system and portions of the cerebral cortex. The recorded pattern of neuronal activity is felt by the authors to be more than a record; it is an unending succession of patterns temporally arranged which can later be activated by a scanning process for purposes of comparative interpretation. It is thought that the interpretive cortex, i.e., the superior and lateral surfaces of both temporal lobes extending slightly into the parietal lobes, is primarily responsible for handling the mechanisms of recall, comparison, and interpretation. Tests used in assessing aphasia are described. Data on 522 cases for whom presence or absence of aphasia was determined indicate strongly that the left hemisphere is usually dominant for speech regardless of hand dominance. There is also evidence that the right hemisphere does not take over the function of the injured left unless there is complete removal of the left. The intact areas of the left hemisphere will function for the damaged areas, if they can, during speech. Electrical stimulation of speech areas on the surface of the cortex produces two effects on speech: (a) positive or initiation of vocalization, and (b) negative or interference with speech. Vocalization is stimulated when the current is applied to the Rolandic and supplementary motor areas. Alteration of language function such as speech arrest,

hesitation, slurring, repetition, distortion, confusion, and reading and writing difficulties are evoked by stimulation to Broca's area, the supplemental motor area, or the posterior temporo-parietal area. (The supplementary motor area is located on the medial aspect of the cerebral hemisphere, extending up on the superior surface, just in front of the pre-central leg area.) Cases are presented which give evidence that particular deficits in language follow specific cortical excisions. The areas considered in order of their importance for speech according to evidence gained through cortical excision are "the posterior temporo-parietal, Broco's, and the supplementary motor areas." The posterior speech area likely is connected with the pulvinar and postero-lateral nucleus of the thalamus. The subcortical centers in the centrencephalic system seem to coordinate the function of the three cortical speech areas. Lesions near the junction of the parietal and occipital lobes may produce aphasia with more pronounced difficulty with visual aspects of language. There is difficulty in writing when a lesion is placed in the "writing center." This difficulty is transitory, however. Sensory aspects of aphasia are more marked when there is a lesion in Wernicke's area. Motor aspects of aphasia are more pronounced when the lesions are in the general vicinity of Broco's area. "But it is evident that the speech mechanism must function as a whole and is not divisible into restricted functional units." In the last chapter, the authors point out the part played by the brain mechanisms in the learning of languages and recommend that bilingual training should occur early in the life of the child, at least in kindergarten, first and second grade levels if possible. *(M.J.M.)*

954. PIERCY, M., HECAEN, H., and JEAJU LA GUERRA, J., Constructional apraxia associated with unilateral cerebral lesions—left and right sided cases compared. *Brain*, 83, 1960, 225-242.

Constructional apraxia is defined as defective execution of constructional tasks under visual control and is generally recognized as a disability which may result from a posterior cerebral lesion. There is disagreement as to whether the syndrome is more particularly associated with one cerebral hemisphere than the other, and there is no generally accepted theory of the nature of the disability. Studies of constructional apraxia are briefly reviewed in relation to the respective roles of the two cerebral hemispheres. On the basis of records kept in a particular neurosurgical unit over a period of eight years an analysis is presented of the incidence, severity and nature of constructional apraxia resulting from unilateral lesions. 67 patients with unilateral lesions exhibited apraxia; 42 were right-sided lesions; 25 were left-sided lesions. Analysis in terms of distribution of lesions within each hemisphere suggests that right hemisphere lesions giving rise to constructional apraxia are more restricted in their site. Right temporo-parieto-occipital, and to a lesser degree, the right parieto-occipital and parietal regions appear especially vulnerable. In contrast to this, lesions of the temporal, temporo-occipital, occipital and parieto-temporal regions more frequently result in constructional apraxia when the lesion is left-sided. The functions impaired in constructional apraxia appear to be more focally organized in the right hemisphere than in the left. It is observed that the disability is more frequent and more severe in right hemisphere cases and that the localization of responsible lesions tends to be more restricted in right hemisphere cases. Differences between the two hemisphere groups in severity and frequency of disability cannot be accounted for by the masking effect of paresis and dysphasia or by unilateral imperception. The qualitative difference observed cannot be attributed to differences in severity alone. It appears that the right cerebral hemisphere in right-handed people has a special nonsubordinate role in the cognitive functions involved in constructional performance. *(B.S.S.)*

955. REITAN, R., The significance of dysphasia for intelligence and adaptive abilities, *J. Psychol.*, 50, 1960, 355-376.

Three groups of 32 subjects each were used to test the relationships between language and thinking or intelligence. One group was composed of patients with brain lesions and dysphasia, a second brain-injured group was without dysphasia and a third group of hospitalized patients did

not manifest any anamnestic or clinical evidence of organic brain dysfunction. The three groups were carefully matched with respect to age, sex, color, education and type of brain lesion or disease. The psychological battery included the Halstead Neuropsychological Battery, the Trail-Making Test and the WAIS. Results indicated that both brain-damaged groups performed more poorly than the nonbrain-damaged controls on all tests except the verbal subtests on the Wechsler. Generally, the dysphasic and nondysphasic groups had almost equivalent performances regardless of the test complexity. The author concludes that the results suggest that language function (in the adult) is less important in complex thinking than generally presumed. The adaptive abilities related to thinking and intelligence did not appear to differentiate the dysphasic and nondysphasic groups and the implication is that language impairment in dysphasia is a relatively independent deficit rather than a direct manifestation of defective intelligence or thinking ability. *(E.H.N.)*

956. RIESE, W., Dynamics in brain lesions. *J. nerv. ment. Dis.*, 130, 1960, 291-301.

The author discusses the behavioral results of brain lesion by using loss of speech or aphasia as a test object. He employs a historical approach by citing specific case histories and relating the results to various laws of human behavior. *(E.H.N.)*

957. SORIANI, S., FIESCHI, C., and GIDONI, E., Il problema dei disturbi del linguaggio nel programma di riabiltazione del "Centro per lo studio e la cura dell'apoplessia cerebrale" di Genova. (Aphasia in the rehabilitation program of the "Center for the Study and Treatment of Cerebral Apoplexy" of Genoa.) *Bol. Soc. Ital. Fonet. Foniat. Audiol.*, 10, 1960, 64-68.

In the apoplectic patient with lesion to the dominant hemisphere, the rehabilitation process is complicated, often in a serious way, by the presence of aphasia. For a correct logopedic treatment, which of course should accompany the physical reeducation, one should make first the exact and objective evaluation of type and extent of phasic disturbance, taking into consideration all factors that may, somehow or other, affect the final result or reeducation: among these is . . . the preparation of the family (for) the complex task of assistance, that such patients impose. It is not possible to express an opinion on the efficacy of logopedic methods followed by the "Centro per lo studio e la cura dell'apoplessia cerebrale" in Genoa, as in no case the treatment has been applied for a period of time sufficiently long, owing to the present narrowness of aid-assistance systems. *(Authors' summary)*

958. ZANINI, J. C., "Eugnosia, eufasia, y eupraxia," comentario critico. ("Agnosia, aphasia, and apraxia," Critical commentary.) *Acta audiol. foniat. Hispano-Amer.*, 2, 1960, 189-197.

This is a criticism of the paper "Differential Guide to Aphasia Diagnosis in Adults" that appeared in the previous Acta issue. Some definitions and concepts on neurological physiology and pathology and on the problem of aphasia are clarified. The main objection to the paper's focus is the medley of the different functional levels as eugnosia, euphasia, and eupraxia in the adaptation of Eisenson's test for the examination of aphasic type of disorders. This causes a theoretical confusion that limits the correct interpretation of the test's results. The different tests for the examination of aphasia is adequate for diagnosis, but it is necessary to standardize the study of aphasics in our country through a relatively simple test that, under elaboration, will soon be published. *(Author's summary)*

Articulation Disorders

959. FRANCIS, T. R., The articulation of English speech sounds in anterior open bite accompanied by tongue thrusting. *Speech Pathol. Ther.*, 3, 1960, 18-26.

Six cases of open bite accompanied by tongue thrusting and infantile swallowing are described. All showed some abnormality of sounds articulated in the front of the mouth. Six paired drawings contrast tongue positions during articulation for these open bite patients and normals. Discussion, including selections from the literature, indicate conflicting opinion and evidence

about the effect of faulty articulation on open bite and tongue thrusting. *(A.J.B.)*

960. FROESCHELS, E., Some logopedic therapeutic suggestions. *Folia Phoniat.*, 12, 1960, 228-233.

Three problems are considered, *Sydenham's* chorea, dyslalia-tachylalia, and handedness-tonguedness. The optic observation of the affected body parts is suggested to control choreatic movement; silent articulation for dyslalia-tachylalia; and it is noted that handedness and tonguedness may be related to anatomic dominance patterns (tonguedness is measured with the click). *(J.B.R.)*

961. MANGAN, K. R., Speech teaching for older children, *Volta Rev.*, 62, 1960, 319-321.

The Hudgins method of testing articulation was used with a group of upper grade students to (a) obtain a measure of speech intelligibility for each child, (b) evaluate the school's speech teaching program, and (c) demonstrate to pupils and parents the necessity for precise articulation of speech sounds by deaf children. *(J.B.M.)*

962. SHAMES, G. H., and FISHER, J., The relationship of types of articulation errors to intelligibility of speech. *Speech Pathol. Ther.*, 3, 1960, 30-34.

Thirty-four children between the ages of 8 and 13 years with a variety of functional articulatory problems were tested for articulation errors and intelligibility to answer four research questions. Findings were that (a) omission errors seem to influence speech intelligibility to a much greater extent than either substitution or distortion errors; (b) there was no significant relationship between intelligibility and the number of different consonants with errors; (c) speech intelligibility decreased as the total number of articulation errors increased; (d) errors on specific consonants such as [r], [d] [ŋ] and [j] seemed to be more crucial to intelligibility. The limited sample restricts generalizations. Suggestions are made for clinical application of these results and modifications in articulation and intelligibility testing. *(A.J.B.)*

Cerebral Palsy

963. HANSEN, E., Cerebral palsy in Denmark. *Acta psychiat. neurol. Scand.*, Suppl., 146(35), 1960, 7-148.

A discussion of the occurrence of cerebral palsy in Denmark, disease types, etiology and social aspects based on data of 2621 patients born in the period 1925-1953. The material was collected by examining the records of and sending questionnaires to various institutions and practicing physicians and specialists in Denmark. The following findings were noted: (a) Patients are distributed rather uniformly throughout the country. (b) A preponderance of men has been found. (c) Of the 2621 patients, 2511 are unmarried, 103 married, 2 divorced, and the marital status of 5 is unknown. Hospitals and homes for chronic invalids housed 352 of the patients. (d) The number of cerebral palsy patients was found to be 1.3 per 1000 births. A detailed presentation is given of the various proposed classifications of cerebral palsy. The system used by the author is a modification of the classification established by the American Academy for Cerebral Palsy. The main types are spasticity (78.5%), athetosis (9.3%), ataxia plus tremor (4%), spasticity plus athetosis (4.6%), spasticity plus ataxia (2.5%), and diagnosis uncertain (1.1%). Approximately 64% of the patients studied had slight or slight to moderate motor handicap. Grouping of patients according to intelligence ratings are as follows: normal intelligence 47.7%, presumed to be retarded 9.4%, definitely retarded 11.0%, feebleminded 9.8%, imbecile 10.3%, idiot 7.0%, unclassified 4.8%. The intelligence of the patients is correlated with the individual disease types and the motor handicap; a considerably poorer intelligence is found when the affection brings increased topographic involvement and increased motor handicap. Disturbances of speech were found in 938 of 2360 patients (41.7%). Athetosis is the disease type in which disturbances of speech occur most frequently; 218 of 244 patients with athetosis have disturbances of speech. Disturbances of hearing are found in 4% of the patients. Oculo-motor disturbances are found in 21.2% of the patients. Epilepsy was found in 581 (22.2%) of the 2621 patients. The

lower the intelligence the greater the incidence of epilepsy. Compared to the general population, the findings with respect to the etiology of cerebral palsy are as follows: definite preponderance of mothers aged 35 and over; small but definite preponderance of first-born; preponderance of twins; preponderance of prior abortions and stillbirths; preponderance of children with birthweights under 2500 gm; preponderance of abnormal births. An account of the treatment and procedures employed is given in broad outline. Previous medicosocial investigations are described. The employability of cerebral palsy patients, existing educational facilities, problems of education, and sickness funds and assistance benefits are discussed. Recommendations for further improvement are made. *(B.S.S.)*

964. HEADLEY, L., and LELAR, H., A nursery school for cerebral palsied children. *Children*, 8, 1961, 17-21.

A description is given of a residential school for cerebral palsied children established by the United Cerebral Palsy Association of San Mateo County, California. The school emphasizes participation in its program by parents and siblings of the cerebral palsied child. *(N.J.C.)*

965. ILLINGWORTH, R. S., and WOODS, G. E., The incidence of twins in cerebral palsy and mental retardation. *Arch. Dis. Childh.*, 35, 1960, 333-335.

The authors' analyze data from the records of two children's hospitals in England. The incidence of mongoloid, cerebral palsied, and mentally retarded children is shown. Each group is divided into four subgroups: premature and full-term singletons, and premature and full-term twins. A grand total of 1380 children is included in all groups. The authors conclude "the high incidence of twins in cerebral palsy is not merely a reflection of the high incidence of prematurity. The high incidence of twins in mentally retarded children may well be due merely to the high incidence of prematurity." In a statistical addendum to this article by G. H. Jowett and W. M. Wright, it is shown that the discrepancy between the observed and expected incidence of twins among cerebral palsied children was significant at the 1% level of confidence. Similar discrepancies for the mental defectives and mongols are not significant at the 5% level of confidence. *(J.L.S.)*

966. JONES, M. V., Medical-educational diagnosis, *West. Speech*, 24, 1960, 152-155.

This is a description of services provided by the School for Cerebral Palsied Children, Northern California, in San Francisco. The school provides education, treatment, and training for any child in the state whose educational or language development is retarded because of neurological impairment. The diagnostic process generally requires a total of seven or eight days over a two-week period. Since facilities are available for the parents to remain at the school for the entire period, they are invited to accompany the child to most of the examinations. The first step is examination of the child by a neurologist. Appointments are then made for laboratory and X-Ray studies and for examinations by other medical specialists. Primary emphasis during the second week centers about psychological and educational evaluations. Permanent personnel of the school who function as a part of the diagnostic team include a psychologist, speech pathologist, occupational therapist, physical therapist and a diagnostic teacher. The child spends considerable time with each of these specialists. If deemed necessary, the child is referred to other facilities for audiometric or psychiatric evaluations. At the end of the second week, a staff conference is held to review the data accumulated about the child. In approximately half of the cases, recommendations are made for training at the school. A final conference is held with the parents to interpret the findings of the diagnostic study. A complete report is compiled and mailed to the persons and agencies who will plan the child's future program. *(H.L.L.)*

967. MECHAM, M. J., BERKO, M. J., and BERKO, F. G., Speech therapy in cerebral palsy. Springfield, Ill.: Charles C. Thomas, 1960. Pp 307.

Incidence; etiology; classifications; motor and sensory development; perceptual disturbances; emotional, intellectual, adaptive,

and communication development are included in the discussion of the nature and scope of the problem of cerebral palsy. The mental age of cerebral-palsied children increases in steps and often continues well beyond the 15th year of life. Improvement in motor and sensory functions through habilitative measures often increases I.Q. scores from six to 30 points. Analysis of Stanford-Binet scatter patterns and use of Maximum Probable I.Q. scores may provide better prediction of mental development. Deviant propositionality, catastrophic behavior, perseveration, vasomotor and emotional lability, attention disturbances, general rigidities, perceptual and abstracting disturbances, and initiatory confusion and delay are frequently present. 70 to 80% have speech and/or hearing problems which are too varied to warrant a classification of "cerebral palsy speech." Speech is usually delayed from two to five years, incidence of stuttering is high, and omissions rather than substitutions are characteristic. Incidence of hearing loss varies from 5 to 41%. Assessing the level of listening and articulation skills, intelligibility, voice, breathing, neuro-motor functioning, and hearing; and estimating prognosis are elaborated along with discussion of related data. Group therapy is the core of speech and hearing therapy. Overcoming infantilization, developing insight into personal assets, assuming responsibility, and expanded social and experiential contacts stimulate the need for communication. Relaxation; general control through stabilization and resistance; training in chewing, sucking and swallowing; control of drooling; and reflex inhibition improve physiological readiness for communication. Consideration is given to direct speech therapy methods such as skill counseling, group and individual therapy, treatment of special behavior problems, analytic and synthetic approaches, breath control, social speech, articulation and intelligibility improvement, hearing training, and use of the team approach. Stringent structuring of the classroom environment to prevent overstimulation may necessitate relearning in a normal environment. Acceptance of limits; realistic evaluation of performance, behavior, and errors; competition; and learning to cope with tensions are important goals. Educational problems are associated with aphasoid behaviors, reading readiness, perception and the development of sensory avenues, experiential deficits, emotional problems, mental retardation, multiple handicaps, and extreme physical limitations. Teaching approaches appropriate with these difficulties are discussed and illustrated. Diagnosis of aphasia depends on differentiating between language affection due to deficits in the language center and to other conditions associated with cerebral palsy. Criteria are given. For aphasoid problems, training must be given in nonlanguage behavioral integration, and sensory, transcortical, and motor integration of language. Even though motivation is one of the most important factors in prognosis, it has been given little attention. *(M.R.)*

Cleft Palate

968. BEDER, O. E., Congenital cleft lip and palate treatment plan. *J. prosthet. Dent.*, 11, 1961, 184-186.

The prosthodontic treatment plan is one phase of a team effort that is comprehensive and long range in scope. An attempt is made to correlate all information related to the patient's problem in order to arrive at the best solution. Treatment is based on the premise that the burden of responsibility for therapy may shift to other disciplines at any time. *(Author's summary)*

969. BLAKELEY, R. W., Temporary speech prosthesis as an aid in speech training. *Cleft Palate Bull.*, 10, 1960, 63-65.

A prosthetic speech aid may be used on a temporary basis to provide an opportunity for the easy development of oral pressure and good speech patterns. The author believes an obturator may stimulate palatal and pharyngeal movement. As movement increases, the obturator would be reduced in size and eventually removed. If speech result is not completely adequate, a permanent prosthesis or surgery may be used. One case is described briefly. *(A.J.B.)*

970. BRADLEY, D. P., A study of parental counseling regarding cleft palate problems. *Cleft Palate Bull.*, 10, 1960, 71-72.

A questionnaire investigating attitudes about cleft palate problems was answered

by 43 parents of children with cleft lip/cleft palate conditions. Results indicate that about half of the parents felt they adequately understood four of ten problems ordinarily involved in managing the child. Reported anxieties included concern about the child being handicapped, his general health, speech, teeth and appearance. There was strong preference for hearing about clefts from the specialists involved in treatment, and desire to hear about basic associated problems during the first year of the child's life. *(A.J.B.)*

971. CONWAY, H., and GOULIAN, D., Experiences with the pharyngeal flap in cleft palate surgery. *Cleft Palate Bull.*, 11, 1961, 2.

Good speech results were found after the use of an inferiorly based pharyngeal flap operation, sometimes combined with a palatal pushback in a single stage procedure. About half the patients required post-operative therapy. The superiorly based flap showed no advantages and was technically less satisfactory. Of 162 patients, 87.7% achieved acceptable speech, and only eight patients had complications. *(A.J.B.)*

972. CURTIN, J. W., PRUZANSKY, S., and McNALLY, R., Cephalometric evaluation of the Wardill Push-Back Procedure in cleft palate repair. *Cleft Palate Bull.*, 10, 1960, 59-60.

Changes in velar length after surgery with the Kilner modification of the Wardill procedure were studied by lateral cephalometric roentgenography in 27 cases from eight months to nine years of age. Wire identification sutures were inserted at the area where the palatine aponeurosis had been severed from the hard palate, and in the most posterior velar tissues. Findings to date show: (a) immediately following surgery palate is increased in length and thickness; (b) within a few weeks to several months the palate tends to return to its original position and length; (c) cases followed for considerable time show increased velar length after initial shortening, probably due to normal growth; (d) the authors propose that increased palatal length may also be determined by the increased distance it must move to create obturation following postoperative shrinkage. *(A.J.B.)*

973. DEUSCHLE, F. M., Congenital dentofacial anomalies. *Cleft Palate Bull.*, 10, 1960, 61.

Congenital dentofacial anomalies were produced in rats by maternal hypervitaminosis A and riboflavin deficiency. Differential susceptibility of parts of the face to each teratogen was noted. The young produced with riboflavin deficiency had severely affected incisor teeth and shortened jaws. Animals with shorter mandibles had higher incidence of cleft palate. The young as the result of hypervitaminosis A were affected in more proximal portions of their jaws. Retrognathism is common in cleft palate children. *(A.J.B.)*

974. DEUSCHLE, F. M., DESTEFANO, G. A., LONGACRE, J. J., and HOLMSTRAND, K., Soft palate muscular [sic], an anatomical study of full-term cleft palate fetuses using stereoscopic dissection microscope. *Cleft Palate Bull.*, 10, 1960, 60-61.

The tensor veli palatini is divisible into three parts, each with its own nerve branch: (a) posterior part from spina angularis and lateral part of auditory tube cartilage to region of palatine aponurosis, (b) intermediate part, indistinctly separate from the anterior part, from almost the whole length of the lamina lateralis of auditory tube, attaches in a broad aponeurosis to posterior border of hard palate and under surface of horizontal plate of palatine bone, (c) anterior part from scaphoid fossa fans out medially into the soft palate. The anterior and posterior parts, originating on bone and inserting in soft palatal tissue, appear to be tensors of the palate, while the intermediate part is anatomically positioned to open the auditory tube. *(A.J.B.)*

975. DINGMAN, R. O., and BLOOMER, H. H., Clinical observations on the use of the pharyngeal flap in the habilitation of cleft palate patients. *Cleft Palate Bull.*, 11, 1961, 6-8.

Twenty-two patients who have not progressed satisfactorily in speech received pharyngeal flap surgery. On the basis of very high speech standards, general improvement was noted but only three cases showed normal voice quality most of the time, and only one achieved unqualifiedly normal speech. All successfully habilitated cases were younger than 13 years of age.

Completely normal speech is the goal of rehabilitation. Eight factors contributing to success and failure, and an eleven-part standardized procedure for evaluating results is given. *(A.J.B.)*

976. EDGERTON, M. T., Surgical treatment of naso-labial recession in the cleft palate patient. *Cleft Palate Bull.*, 10, 1960, 67-68.

A characteristic residual deformity after cleft lip or palate repair is a noticeably flat upper lip. Several causes for this condition and specific suggestions for surgical correction are listed. The deformity is considered correctable. *(A.J.B.)*

977. FRASER, F. C., Some experimental and clinical studies on the causes of congenital clefts of the palate and of the lip. *Arch. Pediat.*, 77, 1960, 151-156.

This paper is concerned with studies on the experimental production of congenital cleft palate in mice and on the prenatal histories of children born with congenital clefts of the lip and/or palate. It was found that cortisone caused congenital clefts of the secondary palate when injected into pregnant mice. The quantity of cortisone that produced the highest frequencies of cleft palate also reduced the size of the litter, showing that some embryos were being killed by the treatment and resorbed. The stage at which treatment was begun also influenced the frequency of induced cleft palates. The most effective time, using a single dose, appeared to be about 12 days after conception, the palate normally closing about three days later. Establishment of effective dosage and time of treatment confirmed the importance of the genetic constitution. Under the same conditions of treatment, 100% of the A/Jax mouse embryos had cleft palate, as compared with only 17% of the C57BL offspring. A series of observations on both fixed and living embryos showed that the palatine shelves, which before closure hang down on either side of the tongue, approach each other in the midline by a fairly rapid rearrangement of themselves. It appears that a force progressively builds up in the shelves, which at a given time causes them to overcome the resistance of the intervening tongue and bulge out towards each other over the tongue, with concurrent retraction of the portions of the shelves hanging ventrally. There does not seem to be any active growth involved but a rather sudden reorientation. Cortisone delays the process of shelf movement from the vertical to the horizontal position. If the delay is great enough, by the time the shelves reach the horizontal position, growth of the head has carried them so far apart that they are unable to meet and fuse. This appears to be the basis for cleft palate seen at birth. Injection of cortisone directly into the amniotic sac caused cleft palate in some of the treated embryos, possibly by exposing the embryo to abnormal pressures which might increase the resistance of the tongue to the efforts of the shelves to push it out of the way. Another mechanism by which cleft palate can be induced is a recessive gene in the mouse that makes the palate shelves too narrow to meet in the midline even when they reach the horizontal position at the proper time. When an agent is found to be teratogenic in animals, the question arises as to whether it may be a cause of human malformations. This question cannot be answered reliably. Specific cases are discussed with the tentative discounting of any causal association of emotional stress with malformations. Various considerations have led to the suggestion that the genetic predisposition may make the embryo react in a particular way to rather minor environmental differences. The greatest progress will probably come from studies of the embryos themselves to find out, in biochemical terms, what makes the genes so sensitive to their environment. *(M.N.)*

978. GOETZINGER, C. P., A study of hearing level and auditory discrimination in cleft palate adults. *Cleft Palate Bull.*, 10, 1960, 65-66.

The hearing of 42 cleft palate subjects between 16 and 75 years of age was tested for pure tone thresholds by air and bone conduction, speech reception thresholds using the CID W-2 test and supra-threshold discrimination using the CID W-22 and Rush-Hughes version of Harvard PB words. The findings were: (a) as a group the subjects manifested a hearing level within the limits of normal hearing, with 90% within -5 to 25 db speech reception thresholds; (b) auditory discrimination was

normal; (c) analysis of variance showed no significant differences for speech thresholds between subjects with different types of clefts; (d) otological examinations showed a high incidence of previous middle ear pathology, but little active infection. Findings suggest middle ear disease in cleft palate runs its course before adulthood. *(A.J.B.)*

979. HAGERTY, R. F., and HILL, M. J., Mid-facial contour in patients with cleft lip and cleft palate. *Pediatrics*, 26, 1960, 387-396.

Studies related to cleft lip and palate surgery and facial growth are reported and certain philosophies are cited. An investigation by the authors is reported. The results indicate that before the end of the second year of life conventional palatal surgery can be done without detriment to the facial contour; however, it is most important that lip closure be loose in order that a more normal facial contour be obtained. Palatal surgery before the end of the second year of life gives maximal opportunity for good speech development. *(N.J.C.)*

980. HILL, M. J. and HAGERTY, R. F., Efficacy of pharyngoplasty for speech improvement in postoperative cleft palates. *Cleft Palate Bull.*, 10, 1960, 66-67.

The effect of narrowing the velo-pharynx by cartilage homografts inserted behind the musculature of the posterior pharyngeal wall was studied in 20 postoperative cleft palate subjects. Judgments of intelligibility, articulation, hypernasal voice quality and audible nasal emission of air using a six point scale were made on speech samples recorded pre- and postoperatively. One month after operation speech was judged improved more than a half scale point, and one year postoperatively speech was judged more than a full scale point better, suggesting the value of this procedure for patients with mobile, but inadequate palates. *(A.J.B.)*

981. INGALLS, T., Prenatal human ecology. *Amer. J. publ. Hlth.*, 50, 1960, 50-54.

The need for careful "developmental medicine" research is emphasized in respect to congenital anomolies. They should not be "lumped together into a single category," but there should be systematic isolation of the possible pathogenic agents. Fetal deformities vary not only with the type of pathogenic agency, but with the stage of pregnancy, etc. Some data on deafness, cleft lip and palate and other anomalies are presented. *(E.H.N.)*

982. JU, D. M., KASTEIN, S., and CRIKELAIR, G. F., A study on speech defects in adults after major surgical resection for cancer in the head and neck region. *Cleft Palate Bull.*, 10, 1960, 67.

It was observed that speech rehabilitation in the adult after anatomical repair of surgically removed tissue is much faster than in congenital cases. *(A.J.B.)*

983. KELLEHER, R. E., WEBSTER, R. C., COFFEY, R. J., and QUIGLEY, L. F., Jr., Nasal and oral air flow in normal and cleft palate speech; velocity and volume studies using warm-wire flow meter and two-channel recorder. *Cleft Palate Bull.*, 10, 1960, 66.

A new instrument is available for rapid, accurate measurement of nasal and oral air flow velocities. Measurements can be made over periods of time shorter than 1/100 of a second, permitting observation of rapidly changing characteristics. Method is predicated on the cooling effect of air flowing by a warm wire probe. *(A.J.B.)*

984. MALSON, T. S., An evaluation of obturators for the congenital cleft palate. *Cleft Palate Bull.*, 10, 1960, 69-71.

The efficient speech aid should have adequate height, form and tooth placement to accommodate articulatory movements of the tongue. There are three methods of obturating the pharyngeal area: (a) flexible velum, (b) rigid (pharyngeal and meatus types), (c) hinged (fixed and sliding types). The characteristics of each type are reviewed. The author believes the sliding hinge obturator, where the moveable disk is forced against the posterior pharyngeal wall by the velar remnants, has several advantages: little or no lever action on the holding appliance and teeth, less danger of irritation to pharyngeal or velar tissues, can be retained without clamps, does not interfere with movement of teeth or growth of maxilla. *(A.J.B.)*

985. MAZAHERI, M., Prosthetic treatment of closed vertical dimension in the cleft palate patient. *J. prosthet. Dent.*, 11, 1961, 187-191.

The author suggests the use of complete artificial dentures over the remaining natural teeth of cleft palate patients when the lateral and vertical growth is insufficient. The remaining teeth are used for support and are fully protected by copings to prevent decalcification and caries. The prosthetic speech restoration is constructed in stages. An illustrated case report is presented. *(A.K.K.)*

986. McWILLIAMS, B. J., Cleft palate management in England. *Speech Pathol. Ther.*, 3, 1960, 3-7.

Persistent reports of generally good speech in postoperative British cleft palate children led to this American survey of cleft palate management and speech results in England. There is close cooperation between English surgeons and speech therapists, but no interdisciplinary teams as in the United States. The speech of 45 children from three major centers was evaluated. Their average age at surgery was 16.4 months, somewhat later than the currently recommended 12 months. The surgeons, who usually used a version of the Wardill procedure, were not seriously concerned about adverse effects on growth. Rating speech on a five point scale, the author considered 33% completely normal and 47% with good speech. Only 7% were very poor. The author's judgments correlated .98 with the British therapists, suggesting similarity of judgment criteria. There were very few articulatory errors when the surgery was done by qualified plastic surgeons, while children operated on by general surgeons had significantly more errors. Oral air pressure for the entire group was the same with nostrils open and occluded. All of the children with normal, and most with good speech, had not received speech training, suggesting good speech was the result of the surgical closure. A comparison with a previous study of American children showed the English were significantly superior in articulation; the significance was lost when age of surgery was controlled, although the articulation of the English children still appeared to be qualitatively better. Caution must be observed because of the limited sample, but there seems to be support for claims of good speech after early surgical repair. The skill and procedure of the surgeon should also be considered. *(A.J.B.)*

987. MOLL, K. L., SPRIESTERSBACH, D. C., and MORRIS, H. L., An evaluation of subject classifications used in describing the articulation errors of individuals with cleft palates. *Cleft Palate Bull.*, 10, 1960, 62.

A study of 124 children with cleft lips and/or palates using the Templin Articulation Test indicated the group was not homogeneous in articulatory ability. Classification of cleft individuals according to general type of cleft, type of cleft palate, and oral pressure ratios resulted in groups which differed in overall level of articulatory proficiency and, to some degree, in patterns of articulation. Subclassifications will make descriptions of speech errors more meaningful and may help evaluate physical management and speech therapy procedures. *(A.J.B.)*

988. RANDALL, P., BAKES, F., and KENNEDY, C., Causes and treatment of cleft palate-type speech in the absence of cleft palate. *Cleft Palate Bull.*, 11, 1961, 3-4.

Velo-pharyngeal incompetence may be caused by paralysis or deformities of the palate or pharynx. The inappropriateness of certain treatment procedures can be determined by careful diagnosis. Speech after treatment of 18 cases with pharyngeal flap surgery and three with cartilage implant behind the posterior pharyngeal wall generally showed some improvement, but conclusions are guarded. There is a brief discussion of the possible advantages of using an inferiorly based flap. *(A.J.B.)*

989. ROSS, R. B., Cranial base and cervical vertebrae in palate and prepalate clefts. *Cleft Palate Bull.*, 10, 1960, 60.

The size and angles of the cranial base and vertebral anomalies were studied by lateral cephalograms in 367 cleft children from two months to 18 years of age, and in a control group. Although the cleft group was consistently smaller, the proportions of cranial base components and growth increments were identical with the non-cleft group. There was little of

no difference between the groups in the 15 measured angles. Incidence of congenital anomalies of the cervical vertebrae was higher in the cleft group, especially with isolated cleft palate, and usually there was an associated abnormal cranial base morphology. *(A.J.B.)*

990. RUBIN, L. R., WALDEN, R. H., BROMBERG, B. E., and PRESSEL, G., Summary of pharyngeal flap: statistical evaluation. *Cleft Palate Bull.*, 11, 1961, 4-5.

The philosophy is to do as little as possible to obtain good closure at the earliest age. Soft palates are closed between six and eight months; the hard palate is closed by a Lane turnback at one-and-a-half to two years. Speech therapy begins at age three. If velo-pharyngeal closure is considered inadequate six months later a superiorly-based pharyngeal flap is used. In practice this was rarely necessary. Speech results after pharyngeal flap surgery at ages four to eight were exceptionally fine, but poor when the surgery was performed on older children and adults. *(A.J.B.)*

991. SHAMES, G. H., MATTHEWS, J., LUTZ, K, LONGRIDGE, A., and BYERS, V., The relationships among nasal voice quality, speech intelligibilty, and articulation. *Cleft Palate Bull.*, 10, 1960, 62-63.

Before studying relationships among nasality, articulation and intelligibility of cleft palate adults, the authors developed scales for the judgment of nasality. From the recorded speech of 100 males and 100 females representing a continuum of nasality, five valid and reliable levels were demonstrated for each sex. All nasality judgments were made from tape recordings played backwards to eliminate factors of articulation and intelligibility. Articulation measures were based on errors found by trained listeners when a word list containing all American English consonants was read. Intelligibility was measured by writing down what the judges heard when the subjects read a PB-50 list and sentence intelligibility list. Results indicate that significant correlations exist among all three measures in the speech of adults with cleft palate, but are greatest between articulation proficiency and speech intelligibility. The method of scaling nasal quality has a significant bearing on the relationship between nasality and the other two variables. *(A.J.B.)*

992. TOVAR, E. V., Las protesis velo-palatinas como auxiliares en la rehabilitacion foniatrica. (Velo-palatine prostheses as auxilliary aids in the rehabilitation of speech.) *Acta audiol. foniat. Hispano-Amer.*, 2, 1960, 3-12.

The author points out the cases that need speech-aid prosthesis for the velar-palatine region. He reviews the incidence of the clinical pictures, as well as their etiology. He then points out the different technicians that should participate in the rehabilitatory process. He favors only one surgical procedure to close the cleft, knowing that when such operations are repeated they leave scars that limit mobility and, therefore, velar function. He holds that after an operation, even a successful one, it is always necessary to use a velo-palatine obturator. He describes the objectives of the latter and analyzes the difficulties and steps in the manufacturing of such prostheses. His conclusions are limitation of surgical interventions, formation of teamwork, improvement of phonatory, psychologic and aesthetic conditions, and intense use of such speech aids. *(Author's summary)*

993. VINCENT, C. J., The pedodontist in cleft palate rehabilitation. *Cleft Palate Bull.*, 10, 1960, 68-69.

The pedodontist's role in cleft palate rehabilitation should be emphasized since his care of the teeth directly influences the success of orthodontia and prosthodontia, and may have a bearing on speech and psychological habilitation. He might be the individual best suited to act as watch dog of the patient's treatment. *(A.J.B.)*

994. WARREN, D. W., Minor prosthesis for the postoperative cleft palate patient. *J. Amer. dent. Assn*, 61, 1960, 667-670.

Not every patient with cleft palate must be referred to a cleft palate team. The general practitioner can perform a service for the patient with cleft palate whose rehabilitation needs include replacing of missing teeth, restoring occlusion, closing small residual clefts and plumping of the

upper lip. A treatment technic is described. *(Author's summary)*

995. WEBSTER, R. C., COFFEY, R. J., KELLEHER, R. E., and QUIGLEY, L. F., Jr., Value of pharyngeal flap surgery. *Cleft Palate Bull.*, 11, 1961, 5-6.

Pharyngeal flaps are used for persistent velopharyngeal incompetency or where postoperative incompetency is anticipated. Only soft tissue surgery is performed early; hard palate clefts are covered with an appliance and surgery is postponed until the patient is at least five years old to prevent growth problems. Most recent flaps have been based nasally. Flaps are made as wide as the distance between the salpingopharyngeal folds. If necessary the lateral openings can be narrowed or widened by subsequent procedures. The pharyngeal flap operation has real worth in improving swallowing, upper respiratory tract functioning, speech and ear infections. *(A.J.B.)*

Delayed Speech

996. SAMPSON, O. C., Some cases of speechlessness in children. *Speech Pathol. Ther.*, 3, 1960, 77-83.

Fifteen children with little or no speech are described. Deafness, brain damage and defective intelligence are ruled out as major causes of the speech problem. Although they are contributory in several cases, maladjustment is the most commonly observed factor. Brief case notes on each child are included. *(A.J.B.)*

997. SCHAIN, R. J., and YANNET, H., Infantile autism. *J. Pediat.*, 57, 1960, 560-567.

The purpose of the paper was to summarize clinical findings in a group of 50 children between the ages of 3 and 13 years who fulfilled the following criteria for diagnosis of infantile autism: (a) evidence of severe personality disorder characterized by extreme preoccupation with self and unrelatedness to people in his environment (b) presence of a history indicating the onset of this disorder during the first two years of life as manifested by the failure to develop expected patterns of relationships to the parents or other guardians (c) absence of a history of serious motor retardation. Results of clinical investigations revealed the children were all psychometrically severely retarded. Physical and neurological examinations were generally within normal limits. Family histories revealed a low incidence of overt mental illness in the immediate family. Educational and socioeconomic backgrounds of the parents were similar to those of other severely retarded children. Pregnancy, perinatal, and developmental history were unremarkable. Motor development related to sitting, standing and walking were within normal limits in most cases. However, none of the children developed a significant degree of usable speech. Some had used words or phrases for a time but had ceased this and regressed in speech development. There was a high incidence of seizures, 42% giving evidence of one or more seizures in their lives, and 20% of the group had a secondary diagnosis of "convulsive disorder" at time of admission. The tendency toward seizures is interpreted as evidence of an association of cerebral abnormalities with infantile autism. The possiblity is raised that the *limbic system* is the site of cerebral abnormality accounting for the subjects' susceptability to seizures and is related to the subjects' affect disorders. *(N.J.C.)*

998. WILKINS, J. L., Problems involved in attempting to teach an imbecile to speak. *Speech Pathol. Ther.*, 3, 1960, 13-17.

This detailed report of a 29-year-old mongol during nine months of speech training describes his appearance, activities, methods of communication, vocabulary, articulation, comprehension and responses to specific therapeutic techniques. There has been little progress in speech but marked improvement in personality. The author believes the patient can still learn, but would have been more adaptable ten years earlier. *(A.J.B.)*

Diagnosis and Appraisal

999. BATTLÓ, J. M., El factor anoxia en la patologia del lenguaje infantil. (The factor of infantile anoxia in language pathology.) *Acta oto-rino-laryngol. Iber-Amer.*, 11, 1960, 153-156.

An after-birth asphyxia of more than 15 minutes . . . always brings on intellectual deficiencies. The physiopathologic mechanisms of the anoxia are varied. Hearing is

affected in the temporal lobe cortex. The EEG reveals these troubles. *(Author's summary)*

1000. CHUSID, J. G., and McDONALD, J. J., Correlative neuroanatomy and functional neurology. Los Altos, California: Lange Medical Publications, 1960. (10th ed.) Pp. 360.

The text is divided into four major areas of subject matter in neuroanatomy and functional neurology: (a) central nervous system; (b) peripheral nerves and autonomic system; (c) principles of neurodiagnosis; and (d) central nervous system disorders. According to the authors, it is intended as a book for beginners in neurology and will serve best if used as an aid or supplement to standard neurological texts and literature. Although reviews of normal neuroanatomical structures and functions are accompanied throughout by an occasional discussion of abnormal neurological conditions, the first 141 pages are devoted to *normal* structure and function primarily. The remaining pages of the book are devoted to a discussion of structural and functional disorders and their diagnosis. There are several sections of the book which should be of interest to the speech pathologist: e.g., a chart which outlines motor functions of the body and indicates muscles and portions of the nervous system involved in each function, and a summary of the motor functions to be checked for cranial nerves which are directly involved in the speech process. Chapter 14 is a brief, general discussion of aphasia. Chapter 22 is a two-page discussion on audiometry, and Chapter 23 is a three-page discussion on psychometric tests. There is also a brief description of current diagnostic and treatment procedures. *(M.J.M.)*

1001. DELGADO, A. L., Diagnóstico laringológico. (Laringologic diagnosis.) *Acta audiol. foniat. Hispano-Amer.*, 2, 1960, 49-56.

The central theme of this paper is constituted by the differences in criteria among laryngologists and phoniatrsits for the application of medical or rehabilitatory procedures in laryngeal pathology. Voice intensity, pitch and quality, laryngeal appearance, presence or absence of obstruction, respiratory problems, muscles, the neck and the endocrinological conditions of the patient are considered in order to establish the procedure to be followed. Nodules, polyps, contact ulcer, paralysis and fixations of the vocal cords are secondly examined establishing his therapeutic criteria for each one. In conclusion, the author points out that laryngeal problems will be lessened when laryngologists and phoniatrists study each other's procedures. *(Author's summary)*

1002. GALLAGHER, J. R., Specific language disability (dyslexia). *Clin. Proc. Child. Hosp.*, 16, 1960, 3-15.

The author considers the different forms of dyslexia; he makes a critical review of the literature with special reference to the factors underlying the anomaly. The interrogation of the patient and the family, the diagnosis and treatment are briefly presented. *(Courrier*, Paris)

1003. INGRAM, T. T. S., The differential diagnosis of speech disorders in childhood. *Practitioner*, 185, 1960, 188-202.

Methods of history-taking and examination which have been found helpful in the differential diagnosis of speech disorders in childhood are described. The methods used are similar to those employed in the diagnosis of other medical disorders. It is important that a full physical examination with special attention to the function of the articulatory organs and to hearing be performed. A recently described classification of speech disorders in childhood is presented which takes account of the findings of careful history-taking and examination. *(Author's summary)*

1004. STEER, M. D., Modern instrumentation for diagnosis, therapy and research. *Folia Phoniat.*, 12, 1960, 196-204.

A number of instruments for certain clinical purposes are described, among them a multichannel polygraph; pitch meter; nasal probe; delayed feedback recorder; and Békésy audiometer. It is suggested that the instrumentation be used to study the servo-mechanism related speech functions. *(J.B.R.)*

1005. TORRES, J. M., Guia para un diagnostico diferencial de afasias en adultos. (Guide for a differential diagnosis of apha-

sias in adults.) *Acta audiol. foniat. Hispano-Amer.*, 2, 1960, 21-48.

After explaining several general characteristics on the nervous system, the author briefly discusses the psychic development of language according to Wallen. The principal classifications of aphasic problems, the importance of the evaluation of the language pattern of the aphasic patient, the rehabilitatory method to use and the probable prognosis to be given are presented. Since Eisenson's test is considered the most complete, the author adapted those parts required by the particular sintaxis and Spanish phonetics, adding and omitting the convenient material. A control sheet is annexed. *(Author's summary)*

LARYNGECTOMY

1006. FONTAINE, A., and MITCHELL, J., Oesophageal voice: a factor of readiness. *J. Laryngol. Otol.*, 74, 1960, 870-876.

Three cases were chosen to illustrate the importance of emotional factors in the acquisition of pseudo-voice. . . . Two cases did not develop useful voice until they had worked through a prolonged period of emotional upset. . . . The third case . . . shows a patient rapidly acquiring good oesophageal voice masking considerable mental instability. . . . All cases tended to react postoperatively in the light of their previous adjustment. *(Authors' summary)*

1007. HAWORTH, F. E., An electronic artificial larynx. *Bell Lab. Rec.*, 38, 1960, 362-368.

An improved substitute-voice vibrator to be held against the throat is described. The pulse-generating circuit is a two-stage relaxation oscillator. This is followed by a power stage driving a modified telephone receiver. Some provision is made for frequency control over a range of about one octave. Several other design considerations are discussed, e.g., maximum output for low battery drain and naturalness of voice quality. The spectrograph is used to check performance of the instrument. *(E.D.S.)*

1008. KONEČNÝ, L., Parciální operace laryngu pro karcinom. (Partial operations of the larynx for carcinoma.) *Cesko. Otolaringol.*, 9, 1960, 367-374.

The author surveys the long-term results of partial operations of the larynx carried out at the Prague ENT Clinic in 1923-1954, i.e., more than five years ago. The total number of patients was 117. Their average age was 52 years. The condition requiring treatment was most frequent between the age of 51-60 years. From the total number of 117 patients, 113 were men (96.57%) and four women (3.42%). The most frequent operation used was simple thyreotomy with total or partial resection of the vocal cord or the ventricular fold or the ventriculus laryngis which was done in a total of 98 cases. From the total number of 117 patients, reports were received or check-up examinations were made in 61. Among these, 47 patients survived for more than five years. We thus may assume that the mortality of cancer of the larynx after partial operation will include from these 61 patients at the most the 14 remaining patients where we have no data on the cause of death (one patient suffers from an inoperable relapse which developed after more than five years). In all patients who were examined where only partial operations were made the functional results were satisfactory with the exception of one female patient, who has to wear permanently a cannula. All these facts confirm the justification of the use of partial operations in the treatment of carcinoma of the larynx, if the indications are selected correctly. *(Author's summary)*

1009. LAFON, J. C., and CORNUT, G., Etude de la formation impulsionnelle de la voix et de la parole. (A study of the pulse production of voice and speech.) *Folia Phoniat.*, 12, 1960, 176-188.

The study is undertaken to duplicate experimentally esophageal speech with reference to phonemic structure. An acoustic analysis of the bucco-pharyngeal cavities is presented. Spectographic techniques are used to record and analyze voice and speech utterance. The analysis tends to confirm the theory of Hermann and to demonstrate that the speech sound is a nontemporal form. The physiologically developed esophageal voice is reported to be clearly superior to any artificial method. *(J.B.R.)*

1010. MONTREUIL, F., Cancer of the larynx. *Canad. med. Assn J.*, 82, 1960, 1216-1219.

"A brief review of 196 patients with carcinoma of the larynx seen at Notre-Dame and Queen Mary Veterans Hospital [Montreal] between June 1952 and December 1958 is given. Each case should be carefully examined and assessed before the course of treatment is decided upon. Surgery provides a greater chance of cure in all cases other than small localized cordal lesions." The author points out that "a patient who is about to have his larynx removed thereby loses his voice organ, and requires proper psychological guidance. He must be conditioned in advance and assured that he can be rehabilitated and taught to communicate with his fellow men by means of the esophageal voice." Electrical instruments for an artificial voice are available in case the patient fails to learn esophageal speech. Failure to prepare the patient for this consequence can result in a pronounced postoperative psychological shock. *(J.L.S.)*

STUTTERING

1011. FLANAGAN, B., The distribution of pause durations in speech. *South. Ill. Univ.*, TR-4, Sept. 1960, on AFCRC Contract AF 19(604)-6127.

The speech of six normally fluent subjects, six stuttering subjects and a normally fluent subject who read at five rates, was recorded and pause patterns were analyzed on the pause duration analysis device. Frequency of blockage and reading time were also recorded. The obtained data suggest that pause duration distributions are related to reading rate. The curves for cumulative pause duration distributions of subjects with fast reading rate were approximately L-shaped. As reading rate decreases, the reflection point is approached more gradually, with the curves of slower reading rates exhibiting higher absolute frequency of pauses at all pause durations. The data from stutterers with high blockage rate and from a normally fluent subject with low blockage rate resulted in curves of similar shapes when read at similar rates. This may indicate that the pause duration distributions which differentiated stutterers from normally fluent speakers and each other reflected differences in reading rates rather than the differences in blockage by which these subjects are classified. *(Author's summary)*

1012. GOLDIAMOND, I., Effects of delayed feedback upon the temporal development of fluent and blocked speech communication. *South. Ill. Univ.*, TR-2, Sept., 1960, on AFCRC Contract AF 19(604)-6127.

Stuttering subjects read narrative materials daily for 90 minutes for extended periods, two of them for 8 months. The subjects (and two monitors) recorded each moment of nonfluency and were run extensively until stable scores resulted. Experimental conditions were (a) continual delayed auditory feedback (DAF), (b) DAF when subject reported a nonfluency, and (c) DAF during fluent speech, normal feedback at each nonfluency. Principal results were (a) continual DAF decreased fluency initially but not after prolonged exposure, (b) DAF contingent upon blocking reduced number of blockages and increased fluency, and (c) DAF, eliminated temporarily by blockages, decreased both rate of fluent communication and number of blockages. *(J.C.W.)*

1013. ROBBINS, S. D., Correspondence (Editorial page), Stuttering. *New Eng. J. Med.*, 263, 1960, 101.

It is called to the attention of physicians that pseudo-stuttering in young children can be prevented from developing into true stuttering by advice to parents. He mentions handedness, heredity, sibling rivalry, broken homes and insecurity. The latter is considered the predisposing cause of stuttering. Advice to the family physician and pediatrician include, in part, the following: (a) ignore the stuttering completely for one year; (b) make the young stutterer feel adequate; (c) keep calm in his presence; (d) give him love, affection and attention. *(M.N.)*

1014. TROTTER, W. D., The speech of young stutterers in the presence of their mother. *Cent. States Speech J.*, 12, 1960, 51-54.

Fourteen children aged approximately seven and a half years who had been diagnosed by their mothers as stutterers are asked at the time of the initial clinical

interview to tell a story under two conditions. Condition I, the mothers are present; condition II, the mothers are not present. Tape recordings of the narrative are made and analyzed in terms of (a) *nonfluencies*, (b) *number of stutterings*, (c) *overall severity of stuttering* (rated according to the Lewis-Sherman procedure), and (d) *number of words spoken*. Statistically significant differences are not noted for the two conditions on any of the four measures; consequently within the limits of the experiment a mother's attitudes and evaluations may not have a strong influence upon the young stutterer. *(J.B.R.)*

1015. WEISS, D. A., Therapy of cluttering. *Folia Phoniat.*, 12, 1960, 216-228.

Cluttering is reported to be one of the starting points of stuttering and it appears to be inherited. Cluttering is conceptualized as being a *central language imbalance*. Therapy for the clutterer is suggested in terms of syllabic speech; improved articulation; enhanced vocabulary; grammatical structure; and an increased attention span. *(J.B.R.)*

Voice Disorders

1016. BEEBE, H. H., Voluntary tachylalia. *Folia Phoniat.*, 12, 1960, 223-228.

Tachylalia is defined as pathologically fast speech. Sixty normal subjects are used in a comparative study of normal reading, fast reading, and fast talking to measure inner speech language imbalance. An imbalance is noted for fast reading and fast talking but not in proportion to the increase in speed. *(J.B.R.)*

1017. CASTLEMAN, B., and KIBBEE, B. U., (Eds.), Case records of the Massachusetts General Hospital (Weekly clinicopathological exercises). *New Eng. J. Med.*, 263, 1960, 965-971.

This presentation of a case involved a two-and-a-half-year-old boy who was admitted to the hospital because of precocious puberty. During the six months before entry the voice deepened. Penile enlargement and frequent erections were observed. Pubic hair was noted several weeks before admission. There was no exposure to androgens. An operation was performed on the eighteenth hospital day. There was no precedent for a case of this type. Three months after surgical exploration the patient died. At autopsy there was revealed a hepatoma that produced a gonadotropin-like substance that causes sexual precocity. *(M.N.)*

1018. MAYA, S. A., Alteraciones de la voz y disendocrinias. (Alterations of the voice and endocrine disorders.) *Acta audiol. foniat. Hispano-Amer.*, 2, 1960, 105-160.

A historical review [of] the study of voice and an up-to-date exposition on the anatomy and physiology of the larynx constitute the first part of . . . [the] paper. Some important observations on hydroelectrolytic equilibrium and neuro-muscular excitability in relation to endocrinal disturbances that foster voice alterations are summarized. . . . The role of hormones in phonation, from the physiological changes accompanying voice change to the feminine climacteric and the pathological alterations so typical to hypothyroidism, hypercorticoadrenalism, etc., [are discussed]. Clinic cases are related. . . . *(Author's summary)*

1019. VAN RIPER, C., and IRWIN, J. V., Voice and articulation. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1959. Pp. 566.

A reexamination of hypotheses and an evaluating and systemizing of recent research pertaining to etiology and therapy in areas of vocal and articulatory abnormalities. Treatment of the two disorders is formulated in terms of information theory (automatic control through feedback) and modern learning theory (highly integrated habitual response). Defective articulation is a frequently unrecognized component of voice, language, and rhythm disorders. Severity of defective articulation is estimated in terms of listener's and speaker's awareness of error. Maintenance of error is attributed to monitoring by kinesthetic and tactual feedback. Correction of error depends upon case's ability to scan and match two memories: the model provided by the therapist and the memory of his own speech. Problems of defective auditory discrimination, memory span, and perception of sound sequence greatly disturb the scanning and matching processes. Articulation testing provides criteria for selecting cases and planning therapy in terms of prognosis. Yardstick for measuring difficulty and progress in therapy should be

similarity of error to the standard sound. Acoustically, all articulatory errors should probably be categorized as substitutions. Precise analysis may reveal that articulatory error is best described kinesiologically. Voice disorders are categorized as functional and organic for descriptive purposes only; therapeutic procedures are not dichotomized. Functional disorders are more prevalent than organic pathologies because many of the characteristics of voice are learned. Description and etiologies of the various organic and functional disorders adversely affecting the quality, pitch, and/or intensity of phonation are systematically presented. Therapy for voice disorders should begin with the investigative interview in which the case is enlisted as a co-worker in eliminating maintaining causes and mastering better habits of phonation. The correction of voice, as of articulation, is based upon the feedback theory of learned automatic control mechanisms. The monitoring of speech is by a blended backflow of information along the various sensory circuits. In defective speakers some of the return messages may be blocked. Learning-centered therapy must reopen monitoring circuits. Tactual and kinesthetic echoes tend to become the dominant control for articulation; whereas; phonatory monitoring seems to rely primarily upon the auditory circuit, since movements for phonation are not accompanied by conscious feelings of contraction. Therapeutic principles are the same, however, in that the case must be taught to inspect (scan) the feedback of messages from his own output, match (compare) the feedback against a learned standard, and vary (correct) his output until error signals are eliminated. Vital to the correcting process are the abilities to search for various ways of production, to fixate by bringing the correct output into exact focus, and to stabilize the new production. Therapeutic methods are discussed in terms of this cybernetic theory of learning. The physiological, anatomical, and acoustical aspects of normal voice and articulation are succinctly discussed in the last five of the 15 chapters. 868 references. *(E.Y.Z.)*

GENERAL

1020. ANON., Statutory registration. *Speech Pathol. Ther.*, 3, 1960, 51-54.

In 1959 a bill was presented to the British Parliament to provide for registration and regulation of "professions supplementary to medicine." The history of this bill and the successful opposition to inclusion of speech therapists under its provisions by the College of Speech Therapists is reviewed. The major arguments for independent professional status include established methods of maintaining high standards of training and professional behavior, and the fact that the greater part of work in speech therapy is outside medical services. *(A.J.B.)*

1021. ANON., Terminology for speech pathology. *Speech Pathol. Ther.*, 3, 1960, 35-39.

A terminology authorized by the College of Speech Therapists (London), 1959, is presented. After introductory information, specific disorders are listed under problems of voice, articulation, language and speech, with synonyms, descriptions and causes. Major problems defined are aphonia, dysphonia, puberphonia, excessive nasality, insufficient nasality, ventricular fold voice, pseudo voice, alalia, dyslalia, structural articulatory defects, dyseneia, anarthria, dysarthria, articulatory apraxia, articulatory dyspraxia, sigmatism, rhotacism, aphasia, dysphasia, agnosia, apraxia, alexia, agraphia, agrammatism, jargon, acalculia, amusia, paraphasia, -eriphrasis, verbal perseveration, recurrent utterance, palilalia, echolalia, stammering, nonfluency, primary stammering, secondary stammering, cluttering. *(A.J.B.)*

1022. BLAKELEY, R. W., HOLDEN, D. H., and LESLIN, G. J., A preliminary report of the implementation of the Oregon hearing aid law. *Asha*, 2, 1960, 171-173.

In April 1959 the Oregon legislature enacted a bill pertaining to registration of individual hearing aid fitters and dealers. A written and performance examination must be passed covering certain basic areas. Precautions against unethical practices are included. The general character of the examination is discussed and the results of 92 applicants are presented. Factors in the performance examination which caused particular difficulty are discussed. *(S.H.A.)*

1023. BUTFIELD, E., MITCHELL, J. C. E., and POLLITT, J., What is a speech

therapist? *Speech Pathol. Ther.*, 3, 1960, 84-87.

In three independent essays, the work of a speech therapist is described. Emphasis is given to counseling families, relationships with related disciplines and diagnostic responsibility. *(A.J.B.)*

1024. CARHART, R., Speech pathology and audiology. *Asha*, 2, 1960, 99-101.

This article is a report of an address to the American Medical Association Joint Committee to study the Relationships of Medicine with Allied Health Professions and Services. Four generalizations are discussed regarding the purposes and current status of the field of speech pathology and audiology: an independent and self-directed speciality for coping with communicative disorders exists; the management of communicative disorders is primarily educational rather than medical; although this speciality is now medical, it has developed techniques that supply information which the physician finds useful in diagnosis and in planning patient care; since this speciality can perform its task most effectively when housed in a medical environment, the nurturing of proper interprofessional relations is imperative. It is important to reiterate that the field of communicative disorders has evolved from nonmedical fields and has always integrated contributions from many disciplines. The certification program of ASHA is discussed. *(S.H.A.)*

1025. DOOB, L. W., The effect of codability upon the afferent and efferent functioning of language. *J. soc. Psychol.*, 52, 1960, 3-15.

An adaptation of the codability hypothesis of Whorf and Brown concerning the structure of language and its effect on perception was examined. A series of experiments was performed among 104 children and adolescents and nine adults of the African Ewe tribe whose language differs in codability from the English language. With the exception of the nine adults and nine children, both English and the Ewe language were used. The subjects were given a size and color test in which a series of two cards which differed in size and color were presented to them. Half of the subjects were addressed in Ewe, the other half in English. 69 of the subjects were also asked to name the colors which had been presented; 26 were asked to state their age, to count and to name kinship terms. The words used as responses differed in codability from Ewe to English. No statistically significant difference was shown in the responses between those who had been addressed in English and those who had been addressed in Ewe. This led the author to conclude that "category codability alone does not afferently determine perception, rather other factors in the stimulus situation must operate." *(J.G.S.)*

1026. DUNN, L. M., and BROOKS, S. T., Peabody picture vocabulary test performance of educable mentally retarded children. *Train. Sch. Bull.*, 57, 1960, 35-40.

The PPVT is reported to be an untimed test of auditory comprehension for the spoken word which is individually administered. It is reported as being an effective measure of verbal intelligence of educable mentally retarded pupils of school age. *(N.J.C.)*

1027. EVSEIEV, N. P., Otolaringologicheskaia pomosch v Amerike i v Sovietskom Soiuzie. (Otolaryngological service in the U.S.A. and in the U.S.S.R.) *Vest. Oto-Rino-Laringol.*, 22, 1960, 112-117.

The author compares the statistical data on the number of otolaryngologists and otolaryngological services in the Soviet Union and in the U. S. The data on the U. S. he derives from the publications of HEW and other American sources. He arrives at the conclusion that the rate of increase of otolaryngologists in the U.S.S.R. is faster than that of the U. S. Whereas in 1949 the Soviets had twice as many otolaryngologists as in the U. S., in 1956 they had four times as many. The author claims that the specialized medical help in ENT diseases was more evenly distributed in U.S.S.R. urban and rural communities than in the U. S. Per 10,000 population in the U. S. there were 0.1 hospital beds, whereas in the U.S.S.R. there were 0.6 beds. Education of otolaryngologists is carried on in the Soviet Union at the expense and with the support of the state. Likewise medical help to the population is nationalized. *(B.V.M.)*

1028. FLORES, L. O., Notas sobre actitudes psicologicas de los padres de niños

con trastornos en la comunication. (Notes on psychological attitudes of the parents of children with communication disturbances.) *Acta audiol. foniat. Hispano-Amer.*, 2, 1960, 57-68.

The author studies interpersonal relations considering that an individual faces two basic problems: individual unity and the need to socialize. First the mother-child relationship appears starting from conception, followed by lactancy and finally with a strengthening of the social relationship of both of them. Premature weaning or the mother's death are some of the causes that could alter this relationship. The father's figure during this stage is considered marginal and indirect, influencing the child only through the mother's behavior. The father's role augments as the child matures. The social scheme of the child is completed by his brothers and sisters. The parents' attitudes are altered when communication problems exist in their offspring. These attitudes can result in anxiety, bewilderment, guilt, a biological inferiority complex, aggressiveness towards divinity or despair, all of which can reach psychoneurotic or psychotic stages. If there is understanding and tenderness in the parents along with education and emotional maturity, problems are tackled maturely and productive attitudes are achieved. If these conditions are not met, overprotection, ignorance of the problem, and other attitudes are encountered. Finally, each condition is analyzed. *(Author's summary)*

1029. FOSTER, S. K., Industry objectives. *Hearing Dealer*, 10, 1960, 6-8.

The responsibilities of those in the hearing aid business are outlined and discussed. The primary goals are (a) to eliminate unethical practices at the level of the manufacturer as well as at the dealer level, with strict adherence to the industry's Code of Ethical Trade Practices; (b) to gain acceptance of the code by the Federal Trade Commission; (c) to assist in better cooperation among the various groups caring fothe hearing handicapped—otologists, audiologists, hearing aid manufacturers and hearing aid dealers; (d) to raise the standards and training of the hearing aid dealer; (e) to attain better organization within the Society of Hearing Aid Audiologists; and (f) to increase the membership of the SHAA. *(D.A.H.)*

1030. GARDNER, W. J., LICKLIDER, J. C. R., and WEISZ, A. Z., Suppression of pain by sound. *Science*, 132 (3418), 1960, 32-33.

A procedure involving music and noise has been effective in suppressing pain in 5,000 dental operations. The music promotes relaxation and the noise directly suppresses pain. An explanatory hypothesis is presented along with the procedure and details of results. *(F.R.)*

1031. HARRINGTON, D. A., A health oriented approach to speech and hearing programs. *Hearing News*, 28(4), 1960, 12-14.

With the anticipated increase in the number of speech and hearing problems due to the population increase and a greater number of older people, there is a need to expand services. There is a need for personnel, facilities, funds and improved procedures. How can these needs be met? The Children's Bureau is one agency which can, and is, helping. The Children's Bureau has been instrumental in helping to promote and to support programs for speech and hearing which are carried on by the various state health departments and crippled children's agencies. In addition to training programs for deafness, cleft palate, cerebral palsy, etc., the Bureau supports many special research projects. Ten of these are presently concerned with speech and hearing handicaps. The financial support is presently on the order of $620,000 for speech and hearing services and research. *(D.A.H.)*

1032. McCAUSLAND, M., Twenty years of speech correction in Pennsylvania: 1939-1959. *Penn. Speech Ann.*, 17, 1960, 63-70.

A comprehensive review of the status of speech correction in the public schools of Pennsylvania, from the first program in 1912 (Pittsburgh, three teachers) to 1959 (all reporting counties, over 312 teachers and 4 supervisors). Separate attention is given to first, second, and third class, and independent district programs, county programs, the school code, speech improve-

ment, block system and other sources of speech correction in the state. *(A.J.B.)*

1033. NEWELL, E. A., Ethical relationships between centers and the medical profession. *Hearing News*, 38, 1960, 13-14, 16, 18.

The author discusses several possible working relationships between the speech and hearing center and the otologist. These range from no otological-audiological cooperation to the inclusion of an otologist on the clinic staff. These relationships are discussed in the light of ethical considerations as set up by the American Speech and Hearing Association and by the American Academy of Ophthalmology and Otolaryngology. The best working relationship, according to Dr. Newell, lies in the speech and hearing center affiliated with a medical school. *(D.A.H.)*

1034. NUTTALL, E. C., When should clinical practice begin? *Asha*, 2, 1960, 207-208.

The process of training speech correctionists involves many difficulties. Problems arise from the limits of time and the educational requirements of individual institutions. It is important that students are not hurried into clinical practice without appropriate and effective training. *(S.H.A.)*

1035. PETERSON, G. E., Prospectus of professional stature: research. *Asha*, 2, 1960, 64-67.

In the profession of speech pathology and audiology, the foundation must be something beyond clinical service. Research should always be of central importance. Adequate research must be based on a thorough understanding of the processes of normal speech production and be done for purposes of understanding rather than for publication. Thus, it is important that the research investigator have a clear understanding of the present status of knowledge in this field. Research should not be confined to one method. Comments are made concerning research in several areas. *(S.H.A.)*

1036. POWERS, M. H., Prospectus of professional stature: service. *Asha*, 2, 1960, 33-36.

This article discusses the service aspects of the professional field of speech pathology and audiology. The rapid growth of the clinical services aspect has resulted in a shift of the proportion of the field's total activity to this area. The public image of the profession involves the kinds of services which are rendered. In order to continue to grow in stature and influence the profession must insure technical competence, appropriate ethical attitudes and practices, competence of organized speech and hearing services, and a clear means of identifying speech and hearing specialists. The carrying out of these responsibilities involves training institutions, employers, state and local organizations and the national organization. It is assumed that there will be a substantially increased demand for services. Solutions to meet this need involve more than purely quantitative answers. They also will involve a more precise definition of ultimate professional goals and service. *(S.H.A.)*

1037. SHIR, S. L., Correspondence. *New Eng. J. Med.*, 263, 1960, 981.

This is a letter to the editor informing him that in Boston there is a Massachusetts Parents Association for the Deaf and Hard of Hearing. This organization is waiting to serve other parents who find themselves faced with the problem of raising and educating a deaf child. *(M.N.)*

1038. SILVERMAN, S. R., Prospectus of professional stature: training. *Asha*, 2, 1960, 37-40.

In order to understand the training needs in the field of speech pathology and audiology it is important to recognize that this area has a common and essential objective similar to any profession. There has been a tendency for people to regroup themselves around problems instead of disciplines in relationship to the rapidly expanding accumulation of knowledge. This affects not only the training that is done but the research that forms the basis for such training. An example in our present society is the regrouping around the problem of communicative disorders. This grouping around disorders must recognize its basis in disciplines and significant areas of activities such as physics, biology, psychology, education, anthropology, and sociology. *(S.H.A.)*

1039. STEER, M. D., and STEER, R., Some speech pathology and audiology centers in Europe. *Asha*, 2, 1960, 131-135.

For many years speech pathologists and audiologists in Europe have engaged in extensive research and investigation in clinical practice. The language barriers which exist have resulted in a great dearth of data pertinent to our research. Speech and hearing centers were visited in Denmark, Germany, the Netherlands, Switzerland, Italy, Spain, France, England and Scotland. A brief description of centers in each of these countries is presented. *(S.H.A.)*

1040. WALLACE, H. M., and STARR, H. M., School services for handicapped children in urban areas. *Amer. J. publ. Hlth*, 50, 1960, 173-180.

Officials in 106 cities with 100,000 population or more were queried in a study to determine the status of school services currently provided to handicapped children. All 98 school systems which replied have some provisions for such children but these vary widely in scope and content and in eligibility requirements. While almost all have provision for children with speech difficulty, the hard of hearing, the partially sighted, and those with rheumatic fever or heart disease, the children with epilepsy, cleft palate, emotional disturbance, deafness, or blindness are less frequently provided for. The number of professional personnel reviewing applications for educational placement ranged from one in one school system to 12 in another. Where evaluation teams were employed (38%), size of team and type of personnel participating differed substantially. Suggestions are made for strengthening of services. *(Child Develmpt Abst. Bibl.)*

AUTHOR INDEX

(Figures Refer to Abstract Numbers)

Abel, J., 915
Aikens, A. J., 876
Albrite, J. P., 706
Alexander, R. D., 877
Anon., 708, 709, 766, 767, 796, 1020, 1021
Antonia, Sister R., 833
Apostol, N., 822
Artemov, V. A., 904
Artobolevsky, A. N., 768
Atkinson, C. J., 901

Baker, D. E., 914
Bakes, F., 988
Ballard, C. F., 886
Barna, V., 797
Barnhart, E. P., 834
Barry, H., 944
Barton, L., 775
Battló, J. M., 999
Beck, J. C., 805
Beder, O. E., 968
Beebe, H. H., 1016
Benda, C. E., 924
Benincasa, T., 746
Benson, R. W., 734
Benton, A. L., 945
Berko, F. G., 967
Berko, J., 928
Berko, M. J., 967
Berloco, T., 735
Bigman, S. K., 869
Bilger, R. C., 901
Blakeley, R. W., 969, 1022
Blom, B. V., 914
Bloomer, H. H., 975
Bodea, I., 757
Bolognesi, C., 798, 799
Bonavida, A., 939
Bond, E. K., 886
Bourget, J., 743
Bowden, R. E. M., 887
Bowles, J. A., 879
Bradley, D. P., 970
Bricker, P. D., 905
Bromberg, B. E., 990
Bronzaft, A., 852
Brooks, S. T., 1026
Brown, R., 928
Brown, T. N., 744
Brown, W. J., 878
Bruce, W., 864
Buchwald, I., 979
Burns, D. J., 845
Burris-Meyer, H., 723
Busala, A., 899
Butfield, E., 946
Byers, V., 991

Cadariu, E., 747
Caliceti, G., 799
Carhart, R., 1024
Castleman, B., 947, 1017
Catalano, G. B., 696
Ceroni, T., 800
Chase, E. A., 875
Cherry, C., 879
Chun, R., 724
Chusid, J. G., 1000
Cochran, W. T., 880, 881
Coffey, R. J., 983, 995
Cohen, A., 909
Conway, H., 971
Cornut, G., 910, 1009
Cory, P. B., 769
Costinescu, N., 801
Cox, J. R., Jr., 734
Crawford, J., 922
Creelman, C. D., 710
Crikelair, G. F., 982
Cserveny, A., 797
Culbert, S. S., 719
Cull, O. A., 809
Curtin, J. W., 972

Damborská, M., 697
Danehy, J. J., 906
David, E. E., Jr., 729, 732
Delgado, A. L., 1001
Denes, P., 725
Destefano, G. A., 974
Deuschle, F. M., 973, 974
DiCarlo, L. M., 835, 948
Dickstein, J., 857
Di George, A. M., 802
Dillon, T., 770
Dingman, R. O., 975
Doehring, D. G., 836
Dolch, E., 929
Dombro, R. H., 865
Doob, L. W., 1025
Dripps, E., 857
Dunn, L. M., 1026
Durham, R. E., 927

Edgerton, M. T., 976
Eldredge, D. H., 802, 866
Esslen, V. E., 888
Eutizi, D., 950
Evans, L., 853
Evseiev, N. P., 1027
Ewing, A. W., 771

Feldman, A. S., 804
Fellendorf, G. W., 854
Fieschi, C., 957
Filová, V., 697
Fisher, J., 962
Fishman, J., 805
Flanagan, B., 1011
Flanagan, J. L., 698, 726, 727, 882
Flores, L. O., 1028
Fónagy, I., 916
Fontaine, A., 1006
Ford, E. S. C., 949
Forster, F., 724
Fortunato, G., 896
Foster, S. K., 1029
Fotin, A. V., 748
Foulkes, J. D., 883
Fowler, E. P., Jr., 734
Foxen, E. H. M., 749
Francis, T. R., 959
Fraser, F. C., 805, 977
French, J. R., 837
Frick, J. V., 940
Frisina, D. R., 776
Froeschels, E., 960
Früh, K. F., 885

Galambos, R., 706
Gallagher, J. R., 1002
Gandevia, B., 889
Gandhi, O. P., 720
Gardner, W. J., 1030
Garretson, M. D., 772
Gentili, C., 950
Gershuni, G. V., 699
Gerstman, L. J., 905
Ginccai, F., 735
Giangreco, C. J., 773
Gidoni, E., 957
Gilbert, E. N., 884
Giorgio, B., 711
Goda, S., 930
Goetzinger, C. P., 838, 978
Goldiamond, I., 900, 901, 1012
Golding-Wood, P. H., 806
Gough, J. A., 774
Goulian, D., 971
Graham, B. A., 829
Graham, J. T., 736
Green, D. M., 728, 734
Guerin, M., 743
Guidetti, B., 807
Guttman, N., 726, 727, 729
Hagerty, R. F., 979, 980
Hála, B., 917
Hansen, E., 963

Hardy, W. G., 830
Hargreaves, W. A., 918
Harlow, R. C., 949
Harrington, D. A., 1031

Harris, J. D., 730, 911
Hartlieb, K., 885
Haskins, H. L., 830
Haspiel, G. S., 902
Haworth, F. E., 1007
Hayes, R., 852
Headley, L., 964
Hecaen, H., 954
Heermann, J., 808
Herschberger, A. C., 890
Hill, M. J., 979, 980
Hinze, H. K., 931
Hockett, C. F., 906
Hoffe, W. L., 919
Holden, D. H., 1022
Holmstrand, K., 974
Horowitz, A., 941

Iandoli, E. W., 775
Illingworth, R. S., 965
Inami, T., 716
Ingalls, T., 981
Ingram, T. T. S., 1003
Irwin, J. V., 1019
Ishikawa, A., 707
Ishisawa, H., 737
Iticovivi, M., 801
Jeaju La Guerra, J., 954
Jenks, M. K., 870
Johnston, E. V., 776
Jones, G., 777
Jones, M. V., 966
Jones, W. R., 932
Joynt, R. J., 945
Ju, D. M., 982

Karashima, M., 737
Karashima, T., 737
Kastein, S., 982
Kawata, S., 750
Kawata, T., 750
Kelleher, R. E., 983, 995
Kennedy, C., 988
Kibbee, B. U., 947, 1017
Knight, G., 951
Kodman, F., 809
Koltuv, M., 852
Komarova, E. N., 778
Konečný, L., 1008
Kos, C. M., 751
Kryter, K. D., 712, 912

Ladefoged, P., 891
Lafon, J. C., 910, 1009
Lampard, M. T., 855
Langdon, M. A., 867
Langford, B., 831
Lawrence, M., 810
Lawson, T. O., 809
Lazzaroni, A., 752
Leden, H. Von, 892
Lelar, H., 964
Leslin, G. J., 1022
Levine, E. S., 856
Lewinski, D. A., 881
Lewis, D. G., 933
Licklider, J. C. R., 1030
Lidén, G., 868
Lillywhite, H., 925
Lloyd, G. T., 745
Longacre, J. J., 974
Longridge, A., 991
Loperfido, E., 950
Lowell, E. L., 832
Lozinsky, V. D., 871
Lubart, J., 893
Lubovsky, V. I., 781
Lutz, K., 991

Macarie, Gh., 801
Madonia, T., 696
Maggio, E., 700
Magner, M. E., 779
Mallory, V., 723
Malson, T. S., 984
Manchester, U. of, 780
Mangan, K. R., 961
Manole, A., 762
Margineanu, N., 757
Maspetiol, R., 738, 752
Mathews, M. V., 725
Mathieu, C., 738, 752
Matsui, A., 811
Matsumura, T., 750
Matsuo, K., 716
Matthews, J., 991
Maya, S. A., 1018
Mazaheri, M., 985
Mazeas, R., 743
McCausland, M., 1032
McCormick, E. J., 721
McDonald, J. J., 1000
McLay, K., 753
McNally, R., 972
McWilliams, B. J., 986
Mecham, M. J., 967
Meier, M., 872
Mescheriakov, A. I., 846
Milesky, S. D., 839
Mitchell, J., 1006
Mitchell, J. C. E., 1023
Miyagi, J., 750
Mizogami, I., 811
Mlechin, B. M., 754
Moll, K. L., 987
Montreuil, F., 1010
Morgan, L. C., 894
Morris, H. L., 987
Morkovin, B. V., 840
Morley, M. E., 952
Morozova, N. G., 781
Moscatelli, G., 807
Moser, H. M., 926, 927
Mudd, S. A., 721
Muirhead, J. C., 812
Müller, E., 813
Murphy, A., 857
Myklebust, H. R., 858

Naito, R., 811
Nandate, J., 755
Nasr, R. T. 920
National College of Teachers of the Deaf, 782
National Institute of the Deaf, 783
Newell, E. A., 1033
Nielsen, S. S., 715
Novilova, L. A., 828
Novotný, Z., 814, 827
Nuttall, E. C., 1034

Ogino, F., 707
Olmsted, R. W., 802
Ombredanne, M., et al., 815
Ormerod, F. C., 701, 816
Ostern, B., 784, 859

Paludetti, G., 895, 896
Partridge, L., 934
Pauline, Sister M., 847
Pawsat, R., 724
Penfield, W., 953
Peterson, G. E., 720, 1035
Petřík, M., 714
Phillips, F. I., 785
Pickett, J. M., 722
Piercy, M., 954
Pittenger, R. E., 906
Pizarro, F. R., 702, 703
Poitras, B., 786
Pollack, I., 734, 913, 941
Pollitt, J., 1023
Posner, M. I., 719
Pospíšil, A., 814, 827
Powers, M. H., 1036
Pratt, G. T., 787
Pressel, G., 990
Price, C. T., 848
Proctor, B., 756
Pruskauer-Apostol, B., 822
Pruzansky, S., 972
Pye, J. D., 704

Quick, M., 873
Quigley, L. F., Jr., 983, 995

Randall, P., 988
Reinecken, R., 713
Reitan, R., 955
Reynolds, G. S., 731
Riese, W., 956
Riley, B. G., 849
Robbins, S. D., 1013
Roberts, L., 953
Roberts, S. E., 817
Robison, D. H., 802
Robles, C., 949
Root, F. K., 849
Rosenstein, J., 788
Ross, R. B., 989
Rotter, P., 841
Roy, H. L., 860
Rubenstein, H., 722, 941
Rubin, L. R., 990
Rudloff, J. S., 789
Rusalem, H., 850
Rushford, G., 832

St. Girbea, 757
Sakharov, P. P., 824
Salamon, E., 757
Salis, B., 758, 818
Sampson, O. C., 996
Schain, R. J., 997
Scheuer, J. L., 887
Schlosshauer, B., 888
Schodder, G. R., 732
Schuknecht, H. F., 759
Scouten, E. L., 790
Sedlacek, K., 714
Segal, M., 760
Semette, D., 738, 752
Septelici-Aron, E., 797
Seymour, J. C., 819
Shames, G. H., 962, 991
Shaver, H. N., 914
Shea, J. J., Jr., 761
Shenshev, L. V., 907
Shir, S. L., 1037
Silverman, S. R., 1038
Simmons, F. B., 705, 706
Simon, A. B., 861
Sinclair, M., 791
Smith, J. L., 897
Smith, S., 942
Sodhi, H. S., 805
Sokolov, A. N., 935
Soriani, S., 957
Sortini, A. J., 739, 851
Spogen, L. R., 914
Spriestersbach, D. C., 987
Starr, H. M., 1040
Steer, M. D., 1039, 1004
Steer, R., 1039
Stenquist, G. M., 845
Stěpánová, P., 697
Stevens, S. S., 731
Stockdell, K. G., 740
Stokoe, W. C., 842
Stowe, F. R., 897
Suehs, O. W., 820

Takamoto, A., 737
Takeda, H., 750
Tanaka, Y., 707
Taniewski, J., 821
Taris, C. M., 903
Tawara, M., 716
Teisanu, E., 762
Terkildsen, K., 715
Tetu, I., 822
Thompson, J. D., 823
Thompson, M. L., 862
Thompson, R. E., 874
Thorne, B., 763
Tobias, J. V., 921
Tomosolu, L., 797
Tonndorf, J., 733
Torres, J. M., 1005
Tovar, E. V., 992
Triandis, H., 908
Trotter, W. D., 1014
Trumbull, R., 734
Trutnev, V. K., 824
Tsuji, M., 737

Ueki, K., 764
Uemura, T., 716
Van Bergeijk, W. A., 729
Van Riper, C., 1019
Vernes, I., 762
Vincent, C. J., 993
Vorce, E. R., 843
Vosteen, K. H., 825

Wagemann, W., 826
Walden, R. H., 990
Walker, A. E., 764
Wall, E. R., 792
Wallace, H. M., 1040
Walter, J., 793
Wang, W. S-Y., 922
Warren, D. W., 994
Watanabe, M., 805
Webster, R. C., 983, 995
Weiss, D. A., 1015
Weiss, E., 717
Weiss, H. H., 741
Weisz, A. Z., 1030
Welch, L., 852
Wilkins, J. L., 998
Williams, B. R., 875
Williams, H. G., 794
Wilson, T. G., 765
Winckel, V. F., 943
Windrem, E. O., 741
Winkler, P., 775
Wolf, S. A., 923
Wood, N., 844
Wood, N. E., 936
Woodhead, M. M., 718
Woods, G. E., 965
Woodward, H., 795
Wortis, J., 937
Wright, H. N., 742

Yannet, H., 997
Yorty, J. B., 863
Yu, F., 720

Zanini, J. C., 898, 958
Zatočil, F., 827
Zhuikov, S. P., 938
Zislina, N. N., 828

HAVE YOU SUBSCRIBED?

To obtain the fullest benefit from the service provided by DSH ABSTRACTS, you will want to read it regularly. In that way, you can profit from the cumulative impact of the abstracted information gleaned from over 280 journals and a wide range of books in the fields of deafness, speech, and hearing. The annual Subject Index will provide an invaluable cross-reference to this material.

If you are not now a subscriber, see General Information on the inside front cover of this issue to find if you are eligible for the reduced subscription rate. Even at its full price, DSH ABSTRACTS is a bargain—saving your time and keeping you abreast of the current domestic and foreign literature in your field.

Deafness, Speech and Hearing Publications, Inc.
c/o American Speech and Hearing Association
1001 Connecticut Ave., N.W.
Washington 6, D. C.

Name _____
(Please print)

Address _____

_____

City _____ State _____

I am entitled to the reduced rate ($5.00) as a member of:

☐ Alexander Graham Bell Association for the Deaf

☐ American Instructors of the Deaf

☐ American Speech and Hearing Association

☐ Conf. of Execs. of American Schools for the Deaf

☐ Please bill me

☐ Check enclosed

Regular subscription rate is $8.00 (domestic), $8.50 (foreign).

XUM

XUM

XUM

XUM